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JAN 25 2001

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ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 631431

2. To: (Receiving Organization) DISTRIBUTION		3. From: (Originating Organization) INTERIM STABILIZATION		4. Related EDT No.: N/A							
5. Proj./Prog./Dept./Div.: INTERIM STABILIZATION		6. Design Authority/Design Agent/Cog. Engr.: W. F. ZUROFF		7. Purchase Order No.: N/A							
8. Originator Remarks: Attached is the Operational Test Report (OTR) for SX-101 Skid "W" with attached Operational Test Procedure (OTP)				9. Equip./Component No.: N/A							
				10. System/Bldg./Facility: 241-G							
				12. Major Assem. Dwg. No.: N/A							
				13. Permit/Permit Application No.: N/A							
11. Receiver Remarks: NONE		11A. Design Baseline Document? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		14. Required Response Date: N/A							
15. DATA TRANSMITTED											
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Designator	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition			
1	RPP-7620	N/A	0	Operational Test Report	N/A	1	1	1			
				(OTR) for SX-101 PIC Skid							
				"W"							
16. KEY											
Approval Designator (F)		Reason for Transmittal (G)			Disposition (H) & (I)						
E, S, O, D OR N/A (See WHC-CM-3-5, Sec. 12.7)		1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)			1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged						
17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)											
(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
1	I	Design Authority W. F. ZUROFF		1/24/01	5724						
1	I	Design Agent F.M. MAIDEN		1/22/01	5724						
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		QA	N/A								
		Safety	N/A								
		Env.	N/A								
18. F.M. MAIDEN Signature of EDT Originator		19. M. R. KOCH Authorized Representative for Receiving Organization		20. W. F. ZUROFF Design Authority/Cognizant Manager		21. DOE APPROVAL (if required) Ctrl No. N/A <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments					

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OPERATIONAL TEST REPORT FOR SX-101 PUMPING, INSTRUMENTATION AND CONTROL SKID "W"

M.R. KOCH

CH2MHILL HANFORD GROUP, INC.

Richland, WA 99352

U.S. Department of Energy Contract DE-AC06-96RL13290-
99RL14047

EDT/ECN: 631431

UC:

Org Code: 47D00

Charge Code: L10250

B&R Code: EW3120071


Total Pages: 99 90
PF 1-25-01

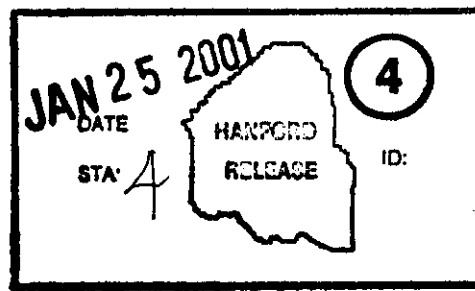
Key Words: SX-101, OTR, OTP, SALTWELL, SKID W, INTERIM STABILIZATION

Abstract: This Operational Test Report (OTR) provides the test results for the operational testing of SX-101 Pumping, Instrumentation and Control Skid "W". The OTR summarizes the results and provides a completed and signed copy of the OTP in the Appendix.

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Release Approval 1/24/01
Date



Release Stamp

Approved For Public Release

**OPERATIONAL TEST REPORT (OTR) FOR SX-101 PUMPING,
INSTRUMENTATION AND CONTROL (PIC) SKID
SKID "W"**

1. PURPOSE

The purpose of this test report is to document the operational test results and conclusions from the completed Operational Test Procedure (OTP-200-004 Rev. B-5) that was performed on SX-101 PIC Skid "W". IS PIC Skid Configuration Drawing H-2-829998 provides traceability for SX-101 PIC skid "V" hardware, software, and test documentation

2. SCOPE

The scope of this operational test included testing of system parameters and functions. The systems checked are listed in Section 1.2 of the OTP and include process instrumentation, system electrical, process air, water drip and interlocks. The attachment to this test report is a copy of the actual test that was performed. The test was conducted by Interim Stabilization and witnessed by the Cognizant Engineer.

3. TEST RESULTS

The test was completed and signed off on November 20, 2000. No test exceptions were noted during the performance of the test.

4. CONCLUSION

The test demonstrated the proper operation of SX-101 PIC Skid "W". All test exceptions were resolved and documented in the OTP exceptions records attached to the OTP.

5. ATTACHMENT

Attached to this report, as Appendix A is a copy of the completed and signed OTP.

NOTE: Ladder Logic printout was not included with attached copy of OTP but can be viewed in the software release documentation "RPP-6208".

WORKING COPY**TANK FARM PLANT OPERATING PROCEDURE****GENERAL****Operational Test Procedure for 6000 Series Pumping And Instrumentation
Control Skids**

PCA Incorporated: TF-2000-236
Procedure Signatures for: OTP-200-004, B-5
Type of Change: Modification
Review Designator: NA
USQ Screening Number: TF-00-0180, Rev. 1

POSITION/ORG	DELEGATE	DATE
Nuclear Chemical Operator (NCO)	<u>B. D. Foreman</u>	<u>09/28/2000</u>
Stabilization Manager	<u>D. J. Saueressig</u>	<u>10/05/2000</u>
Radiological Control	<u>N/A</u>	
Cog Engineer/Interim Stabilization Engineering (ISE)/Design Authority	<u>W. F. Zuroff</u>	<u>10/04/2000</u>
Technical Writer (RPPP-IS)	<u>D. D. Barkost</u>	<u>10/06/2000</u>
Approval Authority	<u>D. J. Saueressig</u>	<u>10/05/2000</u>

Justification: Engineering Request to clarify procedure.

Summary of Changes: Use manometer to check DOV air pressure, update valve listing, and update skid designation letters.

Next Periodic Review Date: April 5, 2002

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This OTP will test and verify the equipment required for Saltwell pumping of specified tank meets the specified Functional Requirements, Safety Requirements, Radiological Requirements, Operations Requirements, and provides a record of the functional test results. The systems/functions that will be tested are listed in the SCOPE Section that follows.

1.2 Scope

The following systems will be tested by this OTP:

- Electrical and Process Air System
- Water Drip System
- Weight Factor and Specific Gravity System
- Diaphragm Operated Valve (DOV) Automatic and Manual Operation
- Jet Pump Flowmeter Operation
- Flammable/Combustible Gas Monitor (FGM/CGM) Interface
- Jet Pump Valving Interlock
- Leak Detection Interlock
- Receiver Tank Interlocks

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2.0 INFORMATION

2.1 Terms And Definitions

2.1.1	cfh	-	cubic feet per hour
2.1.2	CGM	-	<u>C</u> ombustible <u>G</u> as <u>M</u> onitor
2.1.3	DMM	-	<u>D</u> igital <u>M</u> ultimeter
2.1.4	DOV	-	<u>D</u> iaphragm <u>O</u> perated <u>V</u> alve
2.1.5	DTAM	-	<u>D</u> ata <u>T</u> able <u>A</u> ccess <u>M</u> odule
2.1.6	FGM	-	<u>F</u> lammable <u>G</u> as <u>M</u> onitor
2.1.7	FQIT	-	SALW-FQIT-6001* (SUPERNATANT FLOW XMTR)
2.1.8	gpm	-	gallons per minute
2.1.9	IA	-	<u>I</u> nstrument <u>A</u> ir
2.1.10	IN. W. G.	-	<u>I</u> nches <u>W</u> ater <u>G</u> auge
2.1.11	OCS	-	<u>O</u> perator <u>C</u> ontrol <u>S</u> tation
2.1.12	PLC	-	<u>P</u> rogrammable <u>L</u> ogic <u>C</u> ontroller
2.1.13	PRV	-	<u>P</u> ressure <u>R</u> elief <u>V</u> alve
2.1.14	SGT	-	<u>S</u> pecific <u>G</u> ravty <u>T</u> ransmitter
2.1.15	WFIE	-	<u>W</u> eight <u>F</u> actor <u>I</u> nstrument <u>E</u> nclosure

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2.2 Responsibilities

2.2.1 Quality Assurance is responsible for:

- Witnessing and signing steps as identified in OTP
- Verifying the procedure sections are performed correctly.

2.2.2 Test Director is responsible for:

- Providing the equipment found in Subsection 4.1 of this procedure
- Recording equipment status and data per this procedure
- Conducting pre-job planning meeting as necessary
- Conducting pre-job system walkdown
- Scheduling/rescheduling of the test as required
- Recording data, exceptions and other notes as required.

2.2.3 Engineering personnel are responsible for:

- Providing technical support during testing
- Providing programming support during testing
- Forcing data in Programmable Logic Controller (PLC) program during testing.

2.2.4 Maintenance personnel are responsible for:

- Providing assistance during testing.

2.2.5 Operations personnel are responsible for:

- Performing valving manipulations on PIC Skid Systems and Test equipment
- Starting, stopping, and controlling equipment related to Saltwell operations
- Controlling and monitoring parameters from the Data Table Access Module (DTAM), or Operator Control Station (OCS).

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2.2 Responsibilities (Cont.)

2.2.6 Health Physics personnel are responsible for:

- Ensuring RWP requirements are met during field portion of testing
- Surveying tools and equipment out of the Farm
- Providing guidance to craft personnel in maintaining good health physics practices.

2.3 References

2.3.1 The following documents were used to write or are referenced in this procedure:

- HNF-IP-0842, RPP ADMINISTRATION
- RPP-PRO-079, JOB HAZARD ANALYSIS
- RPP-PRO-088, ELECTRICAL WORK SAFETY
- RPP-PRO-1819, ENGINEERING REQUIREMENTS
- JOHNSON YOKOGAWA ADMAG AM SERIES MANUFACTURER INFORMATION
- FOXBORO 823 DP SERIES ELECTRONIC DIFFERENTIAL PRESSURE CELL MANUFACTURER INFORMATION

2.4 General Information

- 2.4.1 After completion of Section 5.1, subsequent sections may be performed out of order, as directed by the Test Director.
- 2.4.2 All entries recorded in this procedure shall be made in black ink.
- 2.4.3 Any non-conformance of the instrumentation or unexpected results during testing shall be logged in the Operational Test Procedure EXCEPTION LOG and thoroughly documented on a Operational Test Procedure EXCEPTION RECORD.
- 2.4.4 Do NOT perform any part of this procedure on faulty equipment. If faulty equipment is discovered, STOP the execution of that section of this procedure and resolve the problem and/or continue with a different section.

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2.4 General Information (Cont.)

- 2.4.5 This procedure does NOT contain any separate data/verification sheets. Verification of procedural steps and validity of the data is incorporated into the specific section.
- 2.4.6 A Job Hazard Analysis form will be used in conjunction with the pre-job safety meeting form when any unusual hazards are identified. The PRE-JOB MEETING FORM will be used to document all attendees.
- 2.4.7 Tests interrupted due to work breaks, personnel support, faulty equipment or other reasons may require performing equipment manipulations such as valving, power down, Lock and Tag, or alarm acknowledgment in order to leave the equipment in a safe condition. The Test Director may deviate from test steps in order to assure safe equipment configuration. Configuration shall be noted so the equipment may be restored at the resumption of testing. Shift Management shall be kept apprised of test status and equipment condition.
- 2.4.8 Acknowledge applicable alarms per Test Director.
- 2.4.9 Sections 5.1 through 5.10 of this procedure are generally performed in the shop prior to equipment placement in the field. Daily release requirements through the Shift office must be met for field portions of testing.
- 2.4.10 In some instances, such as Emergency Pumping Skid testing, the OCS will be untested or not required. Test sections 5.6 and 5.11 will not be performed. Blanks representing OCS data shall be completed with an "NA" in other test sections.
- 2.4.11 If this test procedure is to be used to verify operability after major corrective maintenance on either the PIC Skid or saltwell pump/jumper assembly, the Cognizant Engineer shall define the applicable sections of the procedure. Blanks in all other test sections shall be completed with an "N/A".
- 2.4.12 This procedure is designed to be re-usable for many skid installations. Each skid designator will replace the asterisk (*) in device names used throughout this procedure.

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2.5 Records

2.5.1 The completed WORKING COPY of this procedure, including all exception logs and exception records generated by this procedure, will be kept as permanent records.

2.5.2 **RECORD** the following information for this procedure:

Tank Number: 101-SX

Skid Designator: " W "

2.5.3 **RECORD** the following information or "NA" if an OCS is NOT TESTED.

OCS Location (Building Number): 242-5 Evaporator

2.5.4 **IF** the procedure is to be used for post-maintenance testing, Cognizant Engineer **RECORD** applicable section numbers. "N/A" sections which will NOT be used.

✓ 5.1 ✓ 5.2 ✓ 5.3 ✓ 5.4 ✓ 5.5

✓ 5.6 ✓ 5.7 ✓ 5.8 NA 5.9 ✓ 5.10

✓ 5.11 ✓ 5.12 ✓ 5.13 NA 5.14

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

Warning - Energized circuits and leads are contained inside the cabinet. Observe appropriate electrical precautions. Comply with RPP-PRO-088. Electrical Work Safety to avoid personnel electrical shock hazards.

Caution - Relief valve (SALW-PRV-6001*) will actuate and relieve pressure at 25 psig.

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3.2 Radiation And Contamination Control

- 3.2.1 HPT assistance is required in accordance with RWP.
- 3.2.2 The test shall be STOPPED and the Shift Manager immediately notified, if radiation levels significantly increase as determined by a radiation monitor.
- 3.2.3 Work in Radiological Areas will be performed using a RWP, following review by Radiological Control per the ALARA program (HNF-IP-0842, Vol VII, Section 17.1).

3.3 Environmental Compliance

Discharging clean water upon completion CANNOT cause erosion or puddling.

3.4 Limits

DO NOT perform any tank intrusive work without the express authorization of the Shift Manager.

4.0 PREREQUISITES

Note - Equipment shall be available before the step associated with that piece of equipment.

4.1 The Following Supplies Shall Be Available at the Work Place:

- Digital Multimeter (DMM): Portable, 0-600 volts ac, $\pm 2\%$ accuracy.

Calibration No. 820-45-08-016 Expiration Date 6-25-01 QA KW 11/10/00

- Transmation current (milliamp) simulator or equivalent

Calibration No. 681-13-20-001 Expiration Date 6-5-01 QA KW 11/10/00

- Manometer - minimum range 0-500 IN. W.G. Must have a read out of variable test pressure.

Calibration No. N/A Expiration Date N/A QA N/A ^{KW 11/10/00}

- Manometer - minimum range 0-50 IN. W.G. Must have a read out of variable test pressure.

Calibration No. N/A Expiration Date N/A QA N/A ^{KW 11/10/00}

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4.0 Prerequisites (Cont.)

- Manometer - minimum range 0-30 psig. Must have a read out of variable test pressure.

Calibration No. 820-35-46-003 Expiration Date 7-18-01 QA KW 11/10/00

- Flowmeter Calibrator (Required for Brooks flowmeters only - NA lines for skids with Yokogawa flowmeters)

Calibration No. N/A Expiration Date N/A QA N/A

- Calibration gas - methane 1.5% in air (30% LFL [Required for CGMs - NA lines for Flammable Gas Monitors])

Gas Bottle Lot No. N/A Concentration N/A % Methane QA N/A KW 11/12/00

- Saltwell Jet pump Jumper
- Rotameter or Flowmeter
- Jumper Test Assembly
- 2 way radios for communication between Tank Farm and local control room
- 480V 3 Phase Power Source

Note - Test sections may commence prior to assembly of all test equipment. Test Director is responsible to assure all equipment necessary for a given section is available.

4.2 The Following Conditions must Be Met Before this Test May Commence:

- 4.2.1 The Jet Pump Jumper and Jumper assembly have been placed on the pump recirculation apparatus. ☒
 - 4.2.2 The PIC Skid water tank and run-in tank have been adequately filled for testing. ☒
 - 4.2.3 The Jet Pump Jumper AND Jumper Assembly have been electrically AND pneumatically connected to the PIC Skid. ☒
 - 4.2.4 A pre-job safety meeting has been held before performing this procedure in accordance with HNF-IP-0842, Vol V Section 4.1, PRE-JOB BRIEFING. ☒
- ATTACHMENT A. ☒

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4.0 Prerequisites (Cont.)

- 4.2.5 The PIC Skid has been grounded in preparation for shop or field testing. ☒
- 4.2.6 Test gauges AND rotameter have been installed in correct locations as indicated by the Test Director. ☒
- 4.2.7 A printed copy of Ladder Logic and Alarm Table for the Pump Instrumentation and Control Skid is available at the work site. Copies may be kept outside of Radiological areas until necessary. ☒
- 4.2.8 A P&ID for applicable skid is available at the work site. ☒
- 4.2.9 All personnel initialing or signing this procedure must also enter signature/initials on the PROCEDURE PERFORMER SIGNATURE SHEET. ☒
- 4.2.10 Ensure the following PIC Skid Valves are OPEN prior to starting this OTP.

✓ SALW-V-6035* (equalizing) ✓ SALW-V-6036* (equalizing)

Note - Depending on the PIC Skid being tested, the following valve list identifies all possible valves that may require attention.

- 4.2.11 ENSURE the following PIC Skid valves are CLOSED, as applicable, prior to starting this OTP AND N/A those valves NOT installed:

✓SALW-V-6001*	✓SALW-V-6002*	✓SALW-V-6003*
✓SALW-V-6004*	✓SALW-V-6005*	✓SALW-V-6006*
✓SALW-V-6007*	✓SALW-V-6008*	✓SALW-V-6011*
✓SALW-V-6012*	✓SALW-V-6013*	✓SALW-V-6014*
✓SALW-V-6015*	✓SALW-V-6016*	✓SALW-V-6017*
✓SALW-V-6018*	✓SALW-V-6019*	✓SALW-V-6020*
✓SALW-V-6021*	✓SALW-V-6025*	✓SALW-V-6026*
✓SALW-V-6027*	✓SALW-V-6028*	✓SALW-V-6029*
✓SALW-V-6030*	✓SALW-V-6031*	✓SALW-V-6032*
✓SALW-V-6034*	✓SALW-V-6035* (hi)	✓SALW-V-6035* (lo)
✓SALW-V-6036* (hi)	✓SALW-V-6036* (lo)	✓SALW-V-6037*
✓SALW-V-6043*	✓SALW-V-6044*	✓SALW-V-6046*
✓SALW-V-6047*	✓SALW-V-6048*	✓SALW-V-6049*
✓SALW-V-6050*	✓SALW-V-6051*	✓SALW-V-6052*
✓SALW-V-6053*	✓SALW-V-6054*	✓SALW-V-6055*
✓SALW-V-6056*	✓SALW-V-6038*	✓SALW-V-6045*

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4.0 Prerequisites (Cont.)

- 4.2.12 ENSURE the following Drip Control Box valves are CLOSED, as applicable, AND NA those valves NOT installed.

~~NA~~ SALW-V-6160*

~~NA~~ SALW-V-6161*

~~NA~~ SALW-V-6164*

~~NA~~ SALW-V-6171*

~~NA~~ SALW-V-6162*

~~NA~~ SALW-V-6167*

~~NA~~ SALW-V-6165*

~~NA~~ SALW-V-6163*

~~NA~~ SALW-V-6169*

~~NA~~ SALW-V-6166*

- 4.2.13 ENSURE the following PIC Skid circuit disconnects and breakers are OPEN (OFF), as applicable, prior to starting this OTP.

☒ SALW-DS-6002*

☒ SALW-DS-6005*

☒ SALW-DS-6003*

☒ SALW-DS-6004*

Note - The following breakers are located in SALW-DP-6001*.

☒ Breaker "MAIN"

☒ Breaker 1

☒ Breaker 3

☒ Breaker 5

☒ Breaker 7

☒ Breaker 9

☒ Breaker 11

☒ Breaker 13

☒ Breaker 2

☒ Breaker 4

☒ Breaker 6

☒ Breaker 8

☒ Breaker 10

☒ Breaker 12

☒ Breaker 14

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4.0 Prerequisites (Cont.)

Note - Verification of instrument calibration must be performed before the step associated with that instrument.

4.3 VERIFY the current calibration AND RECORD the calibration date and calibration due date on the Table below.

INSTRUMENT	CALIBR/FUNCT CHECK DATE	NEXT DUE DATE
SALW-PS-6004*	10-9-00	10-9-01
SALW-WFT-6002*	10-9-00	10-9-01
SALW-LT-6003*	10-9-00	10-9-01
SALW-SGT-6001*	10-9-00	10-9-01
SALW-CONV-6001*	10-9-00	10-9-01
SALW-FQIT-6001*	10-9-00	10-9-01
SALW-PI-6001*	10-9-00	10-9-01
SALW-PI-6002*	10-9-00	10-9-01
SALW-PI-6003*	10-9-00	10-9-01
SALW-PI-6004*	10-9-00	10-9-01
SALW-PI-6005*	10-9-00	10-9-01
SALW-PI-6006*	10-9-00	10-9-01
SALW-PI-6007*	10-9-00	10-9-01
SALW-PI-6008*	10-9-00	10-9-01
SALW-PI-6011*	10-9-00	10-9-01
SALW-PI-6012*	10-9-00	10-9-01
SALW-CGT-6001* (IF APPLICABLE)	NA	NA

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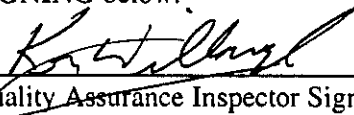
4.0 Prerequisites (Cont.)

- 4.4 Test Director **VERIFY** that Section 4.0 has been COMPLETED by **SIGNING** below.


Test Director Signature

11-11-00
Date

- 4.5 Quality Assurance Inspector **VERIFY** that Section 4.0 has been COMPLETED by **SIGNING** below.


Quality Assurance Inspector Signature

11/11/00
Date

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5.0 PROCEDURE

5.1 Electrical And Process Air Power-up

- 5.1.1 **ENERGIZE** the PIC Skid by **CLOSING** the following **DISCONNECT SWITCHES** in the order found below:

DISCONNECT SWITCH	ENERGIZED (✓)
SALW-DS-6002*	✓
SALW-DS-6003*	✓
SALW-DS-6004*	✓
SALW-DS-6005*	✓

Note - The following circuit breakers are located in SALW-DP-6001*.

- 5.1.2 **ENERGIZE** the PIC Skid by **CLOSING** the following Circuit Breakers in the order found below:

SKIDS A THROUGH J DISCONNECT SWITCH	ENERGIZED (✓)
"MAIN", 1, 3, & 11	NA
2, (WEIGHT FACTOR INSTRUMENT ENCLOSURE)	NA
8, (LEAK DETECTION/HEAT TRACE)	NA
6, (WATER TANK HEATER)	NA
7, (INSTRUMENT ENCLOSURE [PLC])	NA
4, (AIR COMPRESSOR CABINET HEATER & [1] RECEPTACLE)	NA
5, (RECEPTACLE)	NA
9, (FGM AND HEATER)	NA
10, (INTRINSICALLY SAFE PANEL)	NA
12, (HEAT TRACE FOR DIPTUBES AND IA LINE, HEAT TRACE SAMPLE/RETURN)	NA

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5.1 Electrical and Process Air Power-up (Cont.)

SKIDS K THROUGH XW DISCONNECT SWITCH	ENERGIZED (✓)
"MAIN"	✓
7, (WEIGHT FACTOR INSTRUMENT ENCLOSURE)	✓
3, (LEAK DETECTION <u>HEAT TRACE</u>)	✓
8, (WATER TANK HEATER)	✓
5, (INSTRUMENT ENCLOSURE [PLC])	✓
4, (AIR COMPRESSOR CABINET HEATER & [1] RECEPTACLE)	✓
9, (RECEPTACLE)	✓
11, (PIT FGM PUMP AND HEATER) (IF APPLICABLE)	NA
6, (INTRINSICALLY SAFE PANEL)	✓
10, (HEAT TRACE FOR DIPTUBES AND IA LINE, PIT HEAT TRACE SAMPLE/RETURN)	✓
1, (DOME FGM PUMP AND HEATER) (IF APPLICABLE)	NA
2, (DOME HEAT TRACE SAMPLE/RETURN) OR (<u>LEAK DETECTION IN INSTRUMENT ENCLOSURE</u>)	✓
12, (INSTR CABINET AC AND HEATER RECEPTACLE)	✓
13, (DOME FGM HEATER TRACE)OR(REMOTE DRIP PANEL)(IF APPLICABLE)	NA
14, (PIT FGM HEATER TRACE) (IF APPLICABLE)	NA

5.1.3 ACKNOWLEDGE any initial skid or FGM alarms.



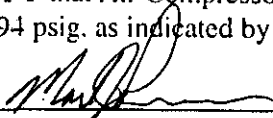
5.1.4 OPEN valve(s) SALW-V-6034*, SALW-V-6050*, and SALW-V-6053*. as applicable (located in the Air COMP Cabinet).



5.1.5 START air compressor SALW-CMP-6001* by POSITIONING switch on the SALW-DS-6004* to the HAND or ON position.



5.1.6 VERIFY that Air Compressor starts and builds up pressure AND shuts off at 86 to 94 psig. as indicated by SALW-PI-6006*.


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5.1 Electrical and Process Air Power-up (Cont.)

5.1.7 VALVE in air to the PIC Skid Water Tank by **SLOWLY PERFORMING** the following:

5.1.7.1 **SLOWLY OPEN** valve SALW-V-6025* (located in the air compressor cabinet). ☒

5.1.7.2 **SLOWLY OPEN** valve SALW-V-6027* (located near the water tank). ☒

5.1.7.3 **SLOWLY OPEN** valve(s) SALW-V-6028* (not installed on all PIC Skids) and SALW-V-6052*, as applicable (located near the water tank). ☒

5.1.7.4 **ADJUST** Pressure Regulator Valve SALW-PCV-6006* to 30 psi (27 to 33 psig) as indicated by SALW-PI-6008*. ☒

5.1.8 VALVE IN air to SALW-PNL-6002* (WFIE Cabinet) by **PERFORMING** the following:

5.1.8.1 **SLOWLY OPEN** valve SALW-V-6026* and SALW-V-6051*, as applicable (located in the Air Compressor Cabinet). ☒

5.1.8.2 **SLOWLY OPEN** valve SALW-V-6001*, located in the bottom of SALW-PNL-6002* (WFIE Cabinet). ☒

5.1.8.3 **ADJUST** pressure control valve SALW-PCV-6001* in SALW-PNL-6002* (WFIE Cabinet) to 20 psi (17.5 to 22.5 psi) as indicated by the pressure gauge located on the face of the valve. ☒

5.1.8.4 **SLOWLY OPEN** valve SALW-V-6004*, located in the middle of SALW-PNL-6002* (WFIE Cabinet). ☒

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5.1 Electrical and Process Air Power-up (Cont.)

- 5.1.8.5 **SLOWLY OPEN** valve SALW-V-6003*, located in the middle of SALW-PNL-6002* (WFIE Cabinet). ☒
- 5.1.8.6 **SLOWLY OPEN** valve SALW-V-6005*, located in the bottom left of SALW-PNL-6002* (WFIE Cabinet) and valve SALW-V-6166*, as applicable. ☒
- 5.1.8.7 **SLOWLY OPEN** valve SALW-V-6006*, located in the bottom left of SALW-PNL-6002* (WFIE Cabinet). ☒
- 5.1.8.8 **SLOWLY OPEN** valve SALW-V-6007*, located in the bottom left of SALW-PNL-6002* (WFIE Cabinet) and valve SALW-V-6165*, as applicable. ☒
- 5.1.8.9 **SLOWLY OPEN** valve SALW-V-6002*, located in the bottom left of SALW-PNL-6002* (WFIE Cabinet). ☒
- 5.1.8.10 **SLOWLY OPEN** valve SALW-V-6020*, located in the middle left of SALW-PNL-6002* (WFIE Cabinet). ☒
- 5.1.8.11 **SLOWLY OPEN** valve SALW-V-6021*, located in the middle left of SALW-PNL-6002* (WFIE Cabinet). ☒
- 5.1.8.12 **SLOWLY OPEN** valve SALW-V-6019*, located in the middle left of SALW-PNL-6002* (WFIE Cabinet). ☒

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5.1 Electrical and Process Air Power-up (Cont.)

5.1.9 **ADJUST** the air flow through the diptubes by **PERFORMING** the following:

5.1.9.1 **ADJUST** flow to dip tubes to 1.5 cfh (1.0 to 2.0 cfh) as indicated by SALW-FIV-6002*.



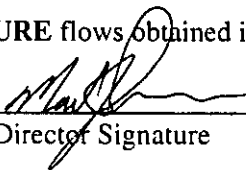
5.1.9.2 **ADJUST** flow to dip tubes to 1.5 cfh (1.0 to 2.0 cfh) as indicated by SALW-FIV-6003*.



5.1.9.3 **ADJUST** flow to dip tubes to 1.5 cfh (1.0 to 2.0 cfh) as indicated by SALW-FIV-6004*.



5.1.9.4 **ENSURE** flows obtained in steps are all within 0.25 cfh of each other.


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5.1.10 **VALVE IN SALW-WFT-6002* AND SALW-SGT-6001* by PERFORMING** the following:

5.1.10.1 **ENSURE** the LOW side AND HIGH side isolation valves, located on SALW-V-6036* in cabinet SALW-PNL-6002* (WFIE Cabinet) are OPEN.



5.1.10.2 **ENSURE** the EQUALIZING valve on valve manifold SALW-V-6036* in cabinet SALW-PNL-6002* (WFIE Cabinet) is CLOSED.



5.1.10.3 **ENSURE** the LOW side AND the HIGH side isolation valves, located on SALW-V-6035* in cabinet SALW-PNL-6002* (WFIE Cabinet) are OPEN.



5.1.10.4 **ENSURE** the EQUALIZING valve on valve manifold SALW-V-6035* in cabinet SALW-PNL-6002* (WFIE Cabinet) is CLOSED.



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5.1 Electrical and Process Air Power-up (Cont.)

5.1.11 **CONFIRM** that a signal is present between SALW-PNL-6002* (WFIE Cabinet) Instruments and the PLC by **PERFORMING** the following:

5.1.11.1 **VERIFY** Weight Factor is approximately 0.0" (0.0 to 0.5") Water Gauge as **INDICATED** by DTAM. **IF DTAM DISPLAYS "<<<<"** indicating less than zero, **VERIFY** continuity between the transmitter and the PLC **AND PROCEED** with the test.


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5.1.11.2 **VERIFY** Specific Gravity is approximately 0.0" (0.0 to 0.5") Water Gauge as **INDICATED** by DTAM. **IF DTAM DISPLAYS "<<<<"** indicating less than zero, **VERIFY** continuity between the transmitter and the PLC **AND PROCEED** with the test.


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5.1.11.3 **VERIFY** Flow rate is approximately 0.0 (0.0 to 0.5 gpm) Gallons Per Minute as **INDICATED** by DTAM. **IF DTAM DISPLAYS "<<<<"** indicating less than zero, **VERIFY** continuity between the transmitter and the PLC **AND PROCEED** with the test.


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5.1.12 Test Director **VERIFY** that Section 5.1 is **COMPLETE** by **SIGNING** below.


Test Director Signature

11-12-00
Date

5.1.13 Quality Assurance Inspector **VERIFY** that Section 5.1 is **COMPLETE** by **SIGNING** below.


Quality Assurance Inspector Signature

11/12/00
Date

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5.2 Water Drip System

Note - If this OTP is being performed with a Drip Control Box, Section 5.14 should be performed instead of this test section.

- If Diptubes are not installed in test area, process air and drip water will be expelled from the side of SALW-PNL-6002* (WFIE Cabinet).

5.2.1 If necessary, **ATTACH** temporary portable hose from diptube outlet to high and medium diptubes from the bottom of the weight factor enclosure, (from valves SALW-V-6005* and SALW-V-6007*).

- **ROUTE** the flexible hose to a suitable drain **AND SECURE**.



5.2.2 **ACTUATE** the Dip Tube Drip system by **SLOWLY OPENING** the following valves:

VALVES	OPEN (✓)
SALW-V-6018* located in the bottom right of SALW-PNL-6002* (WFIE Cabinet)	✓
SALW-V-6016* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓
SALW-V-6013* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓
SALW-V-6008* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓

CAUTION

Relief valve (SALW-PRV-6001*) will actuate and relieve pressure at 25 psig.

5.2.3 **CAREFULLY ADJUST** Pressure Regulator SALW-PCV-6005*, located in the bottom of SALW-PNL-6002* (WFIE Cabinet) to 20 psig (18 to 22 psig) as **INDICATED** by SALW-PI-6001* located in the middle of SALW-PNL-6002* (WFIE Cabinet).



5.2.4 **ADJUST** valve SALW-V-6014* to allow **APPROXIMATELY** 2 drops/second as **INDICATED** by sight glass SALW-FG-6001* (1 to 3 drops/second).



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5.2 Water Drip System (Cont.)

- 5.2.5 ADJUST valve SALW-V-6015* to allow APPROXIMATELY 2 drops/second as INDICATED by sight glass SALW-FG-6002* (1 to 3 drops/second).



Note - Instrument air to the Diaphragm Operated Valve will remain valved in for testing in subsequent steps.

- 5.2.6 VALVE OUT the dip tube drip water by SLOWLY CLOSING the following:

VALVE	CLOSED (✓)
SALW-V-6015* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓
SALW-V-6014* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓
SALW-V-6008* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓
SALW-V-6013* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓

- 5.2.7 Test Director **VERIFY** that Section 5.2 is COMPLETE by **SIGNING** below.


Test Director Signature

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- 5.2.8 Quality Assurance Inspector **VERIFY** that Section 5.2 is COMPLETE by **SIGNING** below.


Quality Assurance Inspector Signature

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5.3 Analog Input Signals

5.3.1 PERFORM WATER TANK LEVEL TEST

5.3.1.1 **PREPARE** the Water Tank Level Transmitter SALW-LT-6003* for test signals by **PERFORMING** the following:

A. **ENSURE** valve SALW-V-6029*, located in the bottom of SALW-PNL-6003* (WATER TANK ENCL), is CLOSED.



B. **ENSURE** valve SALW-V-6031*, located in the bottom of SALW-PNL-6003* (WATER TANK ENCL), is CLOSED.



5.3.1.2 **CONNECT** 0-50 IN. W.G. test Manometer pressure source to the HIGH PRESSURE vent/test port of the level transmitter SALW-LT-6003*.



5.3.1.3 **VERIFY** the LOW PRESSURE vent/test port of the level transmitter SALW-LT-6003* is OPEN to atmosphere.



5.3.1.4 **ADJUST** the test Manometer on the SALW-LT-6003* to a pressure of 31 IN. W.G. (30 to 32 IN. W.G.).



5.3.1.5 **RECORD** the following:

OPERATOR CONTROL STATION WATER TANK LEVEL (RANGE: 28.5 TO 33.5 Inches)	DATA TABLE ACCESS MODULE WATER TANK LEVEL (RANGE: 28.5 TO 33.5 Inches)
30.9 in.	30.9 in.

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5.3 Analog Input Signals (Cont.)

Note - Alarm should annunciate between 9.5 and 10.5 IN. W.G. for Skids A through J, and between 11.7 and 12.7 IN. W.G., for Skids K through XW.

5.3.1.6 **VERY SLOWLY DECREASE** the Level Transmitter test Manometer pressure **UNTIL** the DTAM "PIC WATER LEVEL LOW" (alarm 9) **ANNUNCIATES**.



5.3.1.7 **VERIFY** the Water Tank Low Level alarm is **DISPLAYED** at the OCS.



5.3.1.8 **ACKNOWLEDGE** Water Tank Low Level alarm at the OCS and at the DTAM.



5.3.1.9 **OBSERVE** the OCS and DTAM **AND RECORD** the water tank level readings below:

OPERATOR CONTROL STATION WATER TANK LEVEL (RANGE: 9.5 to 10.5 inches OR 11.7 to 12.7 inches)	DATA TABLE ACCESS MODULE WATER TANK LEVEL (RANGE: 9.5 to 10.5 inches OR 11.7 to 12.7 inches)
12.2 in.	12.2 in.

5.3.1.10 **SLOWLY INCREASE** the test Manometer pressure to 15.5 IN. W.G (14.5 to 16.5 IN. W.G.



5.3.1.11 **OBSERVE** the OCS and DTAM **AND RECORD** the water tank level readings below:

OPERATOR CONTROL STATION WATER TANK LEVEL (RANGE: 14.5 to 16.5 inches)	DATA TABLE ACCESS MODULE WATER TANK LEVEL (RANGE: 14.5 to 16.5 inches)
15.5 in.	15.5 in.

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5.3 Analog Input Signals (Cont.)

5.3.1.12 **VERIFY** the Water Tank Low Level alarm **CLEARs** at the OCS.



5.3.1.13 **REMOVE** the test manometer from the SALW-LT-6003* high pressure vent/test port, **AND RE-INSTALL** vent plugs.



5.3.1.14 **RESTORE** the Water Tank Level Transmitter SALW-LT-6003* by **PERFORMING** the following:

A. **OPEN** valve SALW-V-6029*.



B. **OPEN** valve SALW-V-6031*.



5.3.2 **PERFORM WEIGHT FACTOR TEST**

5.3.2.1 **VERIFY** that NO PLC input signals are **FORCED** and the forcing function is **DISABLED**.



Note - If Drip Control Box is used, manometer pressure source will be connected to the High Pressure dip tube on the Drip Control Box.

5.3.2.2 **CONNECT** the 0-500 IN. W.G. test Manometer pressure source to the **HIGH PRESSURE** dip tube.



5.3.2.3 **ENSURE** SALW-V-6001* is **CLOSED**.



5.3.2.4 **ENSURE** SALW-V-6005* is **OPEN**.



5.3.2.5 **ENSURE** SALW-V-6006* is **OPEN**.



5.3.2.6 **ENSURE** adjustment valves on SALW-FIV-6002*, SALW-FIV-6003*, SALW-FIV-6004* are **CLOSED**.



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5.3 Analog Input Signals (Cont.)

5.3.2.7 ENSURE the LOW side and HIGH side isolation valves, located on SALW-V-6036* 3-Valve Manifold in cabinet SALW-PNL-6002* (WFIE Cabinet) are OPEN.



5.3.2.8 ENSURE the EQUALIZING valve located on SALW-V-6036* 3-Valve Manifold in cabinet SALW-PNL-6002* (WFIE Cabinet) is CLOSED.



5.3.2.9 SET the test Manometer to 125 IN. W.G.



5.3.2.10 OBSERVE OCS and DTAM AND RECORD the Weight Factor on the Table below.

OPERATOR CONTROL STATION WEIGHT FACTOR READING (RANGE: 120 to 130 inches)	DATA TABLE ACCESS MODULE WEIGHT FACTOR READING (RANGE: 120 to 130 inches)
124.6 in.	124.7 in.

5.3.2.11 BLEED off pressure from the Manometer.



5.3.2.12 DISCONNECT the 0-500 IN. W.G. test Manometer pressure source.



5.3.2.13 CLOSE valve SALW-V-6006*.



5.3.2.14 OPEN the EQUALIZING valve, located on SALW-V-6036*.



5.3.2.15 CLOSE the LOW side and HIGH side isolation valves, located on SALW-V-6036*.



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5.3 Analog Input Signals (Cont.)

5.3.3 PERFORM SPECIFIC GRAVITY TEST

Note - A mock signal to the specific gravity transmitter is required to keep a low saltwell level alarm from preventing testing of other instrumentation.

- If Drip Control Box is used, manometer pressure source will be connected to the High Pressure dip tube on the Drip Control Box.

5.3.3.1 **CONNECT** the 0-50 IN. W.G. test Manometer pressure source to the HIGH PRESSURE dip tube.



5.3.3.2 **ENSURE** valve SALW-V-6007* is OPEN.



5.3.3.3 **ENSURE** valve SALW-V-6005* is OPEN.



5.3.3.4 **ENSURE** the LOW side and the HIGH side isolation valves, located on SALW-V-6035* in cabinet SALW-PNL-6002* (WFIE Cabinet) are OPEN.



5.3.3.5 **ENSURE** the EQUALIZING valve, located on SALW-V-6035* in cabinet SALW-PNL-6002* (WFIE Cabinet), is CLOSED.



5.3.3.6 **SET** the test Manometer to 5 IN. W.G. (4.7 to 5.3 IN. W.G.).



5.3.3.7 **OBSERVE** OCS and DTAM **AND RECORD** the Specific Gravity on the Table below.

OPERATOR CONTROL STATION SPECIFIC GRAVITY READING (RANGE: 4.6 to 5.4 inches)	DATA TABLE ACCESS MODULE SPECIFIC GRAVITY READING (RANGE: 4.65 to 5.35 inches)
4.9 in.	4.89 in

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5.3 Analog Input Signals (Cont.)

5.3.4 PERFORM FLOW METER TEST

5.3.4.1 IF necessary to configure the flowmeter, **UNPLUG** the power cord to the SALW-FQIT-6001* (SUPERNATANT FLOW XMTR).



5.3.4.2 IF a Brooks flowmeter is **USED**, **CONFIGURE** SALW-FQIT-6001* to receive signals from a hand held calibrator.



5.3.4.3 **ENSURE** SALW-FQIT-6001* is **POWERED** and **CONFIGURED** for simulated flow signals.



5.3.4.4 **SIMULATE** a flow signal of 2.0 gpm with the hand held calibrator, or from flowmeter face plate.



5.3.4.5 **VERIFY** the SALW-FQIT-6001* transmitter is **OPERATING PROPERLY** by **RECORDING** the following:

OPERATOR CONTROL STATION SUPERNATANT FLOW (RANGE: 1.8 to 2.2 gpm)	DATA TABLE ACCESS MODULE SUPERNATANT FLOW (RANGE: 1.8 TO 2.2 gpm)	SUPERNATANT FLOW XMTR SUPERNATANT FLOW (RANGE: 1.8 TO 2.2 gpm)
2.0 gpm	1.99 gpm	2.0 gpm

5.3.4.6 **RESTORE** the SALW-FQIT-6001* to its original configuration.



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5.3 Analog Input Signals (Cont.)

Note - This test only performed when jet pump jumper and pump are physically mated on the run-in stand in the shop or in the field.

5.3.5 PERFORM DISCHARGE PRESSURE TEST

5.3.5.1 ENSURE Pump recirculation apparatus is **FILLED** with water AND **CONFIGURED** to circulate water through the Jet Pump jumper. ☒

5.3.5.2 PLACE JR-1 valve in the PROCESS position. ☒

5.3.5.3 At the discretion of the Test Director, **INSTALL** temporary interlock jumpers, **OR INITIATE** a software force on pump permissive interlocks for equipment NOT installed or out of service. ☒

5.3.5.4 USING the DTAM, **START** the Jet Pump. ☒

5.3.5.5 RECORD the following pressures on the Table below:

SALW-PI-6012* JET PUMP SUCTION PRESSURE	DTAM DISCHARGE PRESSURE	SALW-PI-6011* JET PUMP DISCHARGE PRESSURE
74.3	111.0	110.7

5.3.5.6 USING the DTAM, **STOP** the Jet Pump. ☒

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5.3 Analog Input Signals (Cont.)

5.3.6 PERFORM PIT FLAMMABLE/COMBUSTIBLE GAS MONITOR TEST

5.3.6.1 **CONNECT** a current source to one of the following:

- Model 4.0 FGM TB2 terminals 15(+) and 16(-)
- Model 4.46 FGM wires 501(+) and 502(-) at PLC-AO
- PIC Skid Instrument Enclosure, PLC MODULE 1, IN 0(+) and IN 0(-).

WA

5.3.6.2 **SET** current source to 4 Ma (3.75 to 4.25 Ma).

WA

5.3.6.3 **RECORD** the DTAM and OCS Flammable Gas DISPLAY on the "Pit FGM/CGM Output" below.

5.3.6.4 **SET** current source to 10 Ma (9.75 to 10.25 Ma).

WA

5.3.6.5 **RECORD** the DTAM and OCS Flammable Gas DISPLAY on the "Pit FGM/CGM Output" below.

5.3.6.6 **SET** current source to 20 mA (19.75 to 20.25 mA).

WA

5.3.6.7 **RECORD** the DTAM and OCS Flammable Gas DISPLAY on the "Pit FGM/CGM Output" below.

Input (mA)	Pit FGM/CGM Output	
	DTAM	OCS
4	NA	NA
10	↓	↓
20	↓	↓

5.3.6.8 **DISCONNECT** the current source, AND if necessary

RESTORE loop INTERRUPTED in Step 5.3.6.1.

WA

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5.3 Analog Input Signals (Cont.)

Note - This test only performed if a dome space FGM is installed.

5.3.7 PERFORM DOME SPACE FLAMMABLE GAS MONITOR TEST

5.3.7.1 **CONNECT** a current source to one of the following:

- Model 4.0 FGM TB2 terminals 15(+) and 16(-)
- Model 4.46 FGM wires 501(+) and 502(-) at PLC-A0
- PIC Skid Instrument Enclosure, PLC MODULE 6, IN 0(+) and IN 0(-).

NA

5.3.7.2 **SET** current source to 4 mA (3.75 to 4.25 mA).

NA

5.3.7.3 **RECORD** the DTAM and OCS Flammable Gas DISPLAY on the "Dome Space FGM Output" below.

5.3.7.4 **SET** current source to 10 mA (9.75 to 10.25 mA).

NA

5.3.7.5 **RECORD** the DTAM and OCS Flammable Gas DISPLAY on the "Dome Space FGM Output" below.

5.3.7.6 **SET** current source to 20 mA (19.75 to 20.25 mA).

NA

5.3.7.7 **RECORD** the DTAM and OCS Flammable Gas DISPLAY on the "Dome Space FGM Output" below.

Input (mA)	Dome Space FGM Output)	
	DTAM	OCS
4	NA	NA
10	↓	↓
20	↓	↓

5.3.7.8 **DISCONNECT** the current source, AND if necessary,

RESTORE loop INTERRUPTED in Step 5.3.7.1.

NA

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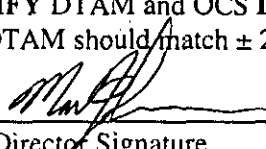
5.3 Analog Input Signals (Cont.)

5.3.8 PERFORM THERMOCOUPLE TEST

5.3.8.1 WARM thermocouple SALW-TE-6004*, located in the Instrument Enclosure.



5.3.8.2 VERIFY DTAM and OCS DISPLAY a CHANGED temperature (OCS and DTAM should match $\pm 2^{\circ}$ F).


Test Director Signature

11-12-00
Date

5.3.8.3 ALLOW SALW-TE-6004* to RETURN to ambient temperature.

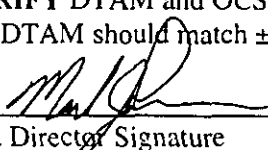


NOTE - Steps 5.3.8.4 through 5.3.8.6 only performed if SALW-TE-6005* is installed.

5.3.8.4 WARM thermocouple SALW-TE-6005*, located in the Water Enclosure.



5.3.8.5 VERIFY DTAM and OCS DISPLAY a CHANGED temperature (OCS and DTAM should match $\pm 2^{\circ}$ F).


Test Director Signature

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5.3.8.6 ALLOW SALW-TE-6005* to RETURN to ambient temperature.



NOTE - Steps 5.3.8.7 through 5.3.8.9 only performed if SALW-TE-6006* is installed.

5.3.8.7 WARM thermocouple SALW-TE-6006*, located in the WFIE.



5.3.8.8 VERIFY DTAM and OCS DISPLAY a CHANGED temperature (OCS and DTAM should match $\pm 2^{\circ}$ F).


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5.3 Analog Input Signals (Cont.)

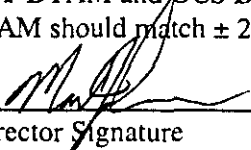
5.3.8.9 ALLOW SALW-TE-6006* to RETURN to ambient temperature.



5.3.8.10 WARM thermocouple SALW-TE-6001*, located in SALW-PNL-6001* INSTRUMENT AIR ENCLOSURE.



5.3.8.11 VERIFY DTAM and OCS DISPLAY a CHANGED temperature (OCS and DTAM should match $\pm 2^\circ$ F).


Test Director Signature

11-12-00
Date

5.3.8.12 ALLOW SALW-TE-6001* to RETURN to ambient temperature.



5.3.8.13 WARM thermocouple SALW-TE-6002*, located on the Jet Pump.



5.3.8.14 VERIFY DTAM and OCS DISPLAY a CHANGED temperature OCS and DTAM (should match $\pm 2^\circ$ F).


Test Director Signature

11-12-00
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5.3.8.15 ALLOW SALW-TE-6002* to RETURN to ambient temperature.

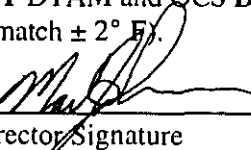


Note - Jumper insulation will prevent thermocouple access.

5.3.8.16 IF accessible, WARM thermocouple SALW-TE-6003* (Jet Pump over temperature thermocouple located on the saltwell Jet Pump jumper).



5.3.8.17 VERIFY DTAM and OCS DISPLAY temperature (OCS and DTAM should match $\pm 2^\circ$ F).


Test Director Signature

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5.3 Analog Input Signals (Cont.)


5.3.8.18 ALLOW SALW-TE-6003* to RETURN to ambient temperature.



5.3.9 REMOVE any jumpers or forces NOT required for the next section.



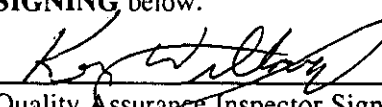
5.3.10 Test Director **VERIFY** that Section 5.3 is COMPLETE by **SIGNING** below.


Test Director Signature

11-12-00
Date

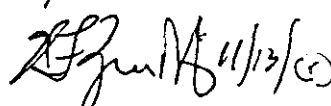
5.3.11 Quality Assurance Inspector **VERIFY** that Section 5.3 is COMPLETE by **SIGNING** below.

*


Quality Assurance Inspector Signature

11/12/00
Date

* REF. HNF-SD-WM-TSR-006 R/1-N
SECTION 5.11.2 PARA. B.3.

 11/13/00
KW 11/13/00

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5.4 Discrete Input Signals

5.4.1 PERFORM VALVE POSITION TEST

- 5.4.1.1 ENSURE the JR-1 valve is in the PROCESS position. ☒
- 5.4.1.2 VERIFY the JR-1 valve indicates "norm" at the DTAM AND "PROCESS" at the OCS. ☒
- 5.4.1.3 PLACE the JR-1 valve in the FLUSH position. ☒
- 5.4.1.4 VERIFY the JR-1 valve indicates "NON-PROCESS" at the DTAM AND "FLUSH" at the OCS. ☒
- 5.4.1.5 PLACE the JR-1 valve in the PRIME position. ☒
- 5.4.1.6 VERIFY the JR-1 valve indicates "NON-PROCESS" at the DTAM AND "PRIME" at the OCS. ☒

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5.4 Discrete Input Signals (Cont.)

5.4.2 PERFORM FLUSH LINE PRESSURE TEST

- 5.4.2.1 **PLACE** the JR-1 valve in the **PROCESS** position. ☒
- 5.4.2.2 **VERIFY** a water supply is **CONNECTED** to the jumper flush hose. ☒
- 5.4.2.3 **ENSURE** Pump recirculation apparatus is **FILLED** with water **AND CONFIGURED** to circulate water through the Jet Pump jumper. ☒
- 5.4.2.4 At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **OR** software forces have been **INSTALLED** on pump permissive interlocks for equipment **NOT** installed or out of service. ☒
- 5.4.2.5 **USING** the DTAM, **START** the Jet Pump. ☒
- 5.4.2.6 **VERIFY** Jet Pump **OPERATION** at the OCS. ☒
- 5.4.2.7 **ACTUATE** pressure transducer SALW-PT-6014* (old name "PS-2") by **PRESSURIZING** the flush line with water. ☒
- 5.4.2.8 **VERIFY** the Jet Pump **IMMEDIATELY SHUTS DOWN** at the DTAM and OCS. ☒
- 5.4.2.9 **VERIFY** flush line high pressure alarm 3, "FLUSH PRESSURE HI" **ANNUNCIATES** at the DTAM and OCS. ☒
- 5.4.2.10 **SHUT OFF** the water supply to the flush line. ☒
- 5.4.2.11 **CYCLE** JR-1 valve to **CLEAR** the flush line high pressure alarm. ☒
- 5.4.2.12 **ACKNOWLEDGE** alarms at DTAM and OCS. ☒

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5.4 Discrete Input Signals (Cont.)

5.4.3 PERFORM RECIRCULATION FLUSH LINE PRESSURE TEST

- 5.4.3.1 **PLACE** the JR-1 valve in the **PROCESS** position. ☒
- 5.4.3.2 **VERIFY** a water supply is **CONNECTED** to recirculation flush line. ☒
- 5.4.3.3 **ENSURE** Pump recirculation apparatus is **FILLED** with water **AND CONFIGURED** to circulate water through the Jet Pump jumper. ☒
- 5.4.3.4 At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **OR** software forces have been **INSTALLED** on pump permissive interlocks for equipment **NOT** installed or out of service. ☒
- 5.4.3.5 **USING** the DTAM, **START** the Jet Pump. ☒
- 5.4.3.6 **VERIFY** Jet Pump **OPERATION** at the OCS. ☒
- 5.4.3.7 **ACTUATE** pressure transducer SALW-PT-6013* by **PRESSURIZING** the recirculation flush line with water. ☒
- 5.4.3.8 **VERIFY** the Jet Pump **IMMEDIATELY SHUTS DOWN** at the DTAM and OCS. ☒
- 5.4.3.9 **VERIFY** recirculation flush line high pressure alarm 39, "RECIRC FLUSH PRSS HI" **ANNUNCIATES** at the DTAM and OCS. ☒
- 5.4.3.10 **SHUT OFF** the water supply to the recirculation flush line. ☒
- 5.4.3.11 **ACKNOWLEDGE** alarms at DTAM and OCS. ☒

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5.4 Discrete Input Signals (Cont.)

5.4.4 PERFORM LOW PRESSURE INTERLOCK TEST

5.4.4.1 PLACE JR-1 valve in the PROCESS position.



5.4.4.2 ENSURE the pump is NOT PRIMED.



5.4.4.3 At the discretion of the Test Director, ENSURE temporary interlock jumpers, OR software forces have been INSTALLED on pump permissive interlocks for equipment NOT installed or out of service.



5.4.4.4 USING the DTAM, START the Jet Pump.



5.4.4.5 VERIFY the Jet Pump SHUTS DOWN in approximately thirty (30) seconds (25 to 35 seconds).



5.4.4.6 VERIFY transfer line low pressure alarm 1 "XFR PRESSURE LOW" ANNUNCIATES at the DTAM and OCS.



5.4.4.7 ACKNOWLEDGE alarms at DTAM and OCS.



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5.4 Discrete Input Signals (Cont.)

Note - This test only performed when jet pump jumper and pump are physically mated on the run-in stand in the shop or in the field.

5.4.5 PERFORM HIGH PRESSURE INTERLOCK TEST

5.4.5.1 IF a water ram will be USED:

A. PLACE JR-1 valve in the PRIME position.

☒ NA

B. USING skill of the craft CONNECT a water ram to the jet pump jumper AND SLOWLY PRESSURIZE the pump and jumper to 140 psi USING water.

☒ NA

5.4.5.2 IF pump will develop 140 psi:

A. PLACE JR-1 valve in the PROCESS position.

☒

B. At the discretion of the Test Director, ENSURE temporary interlock jumpers, OR software forces have been INSTALLED on pump permissive interlocks for equipment NOT installed or out of service.

☒

C. START jet pump with JR-2, BYPASS valve and DOV CLOSED.

☒

5.4.5.3 VERIFY the "XFR PRESSURE HIGH" alarms at DTAM (alarm 2) and OCS WHEN pressure reaches 140 psi (130 to 150 psi).

☒

5.4.5.4 RESTORE pump and jumper to original configuration.

☒

5.4.5.5 ACKNOWLEDGE alarms at DTAM and OCS.

☒

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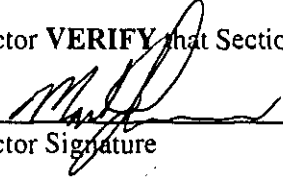
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5.4 Discrete Input Signals (Cont.)

5.4.6 , REMOVE any jumpers or forces NOT required for the next section.



5.4.7 Test Director **VERIFY** that Section 5.4 is COMPLETE by **SIGNING** below.


Test Director Signature

11-12-00
Date

5.4.8 Quality Assurance Inspector **VERIFY** that Section 5.4 is COMPLETE by **SIGNING** below.


Quality Assurance Inspector Signature

11/12/00
Date

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5.5 Specific Gravity Transmitter Operation

5.5.1 At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **OR** software forces have been **INSTALLED** on pump permissive interlocks for equipment NOT installed or out of service.



5.5.2 **SET** the test manometer on the specific gravity transmitter to 13 IN. W.G.



5.5.3 **ENSURE** the following valves are OPEN:

Valve Number	
SALW-V-6034*	✓
SALW-V-6026*	✓
SALW-V-6001*	✓
SALW-V-6004*	✓
SALW-V-6002*	✓

5.5.4 **PLACE** JR-1 valve in the **PROCESS** position.



5.5.5 **ENSURE** Pump recirculation apparatus is **FILLED** with water **AND CONFIGURED** to circulate water through the saltwell Jet Pump.



5.5.6 **START** the Jet Pump **USING** the DTAM, **AND PLACE** the system in automatic.



5.5.7 **VERIFY** the DOV MOVES OPEN.



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5.5 Specific Gravity Transmitter Operation (Cont.)

5.5.8 **OBSERVE** the OCS and DTAM AND **RECORD** the specific gravity readings below:

OPERATOR CONTROL STATION SPECIFIC GRAVITY READING (RANGE: 12.6 to 13.4 inches)	DATA TABLE ACCESS MODULE SPECIFIC GRAVITY READING (RANGE: 12.65 to 13.35 inches)
13.0 in.	13.02 in.

Note - SALW-PI-6005* pressure is to be read IMMEDIATELY WHEN the "SGT LOW" alarm occurs.

5.5.9 **VERY SLOWLY DECREASE** the test manometer pressure UNTIL the DTAM "SGT LOW" (alarm 13) ANNUNCIATES.



5.5.10 **VERIFY AND ACKNOWLEDGE** the Specific Gravity Low Alarm at the DTAM and OCS.



5.5.11 **RECORD** the following:

PARAMETER	READING
OPERATOR CONTROL STATION SPECIFIC GRAVITY (RANGE: 3 to 4)	3.50
DATA TABLE ACCESS MODULE SPECIFIC GRAVITY (RANGE: 3 to 4)	3.51
SPECIFIC GRAVITY MANOMETER READING (RANGE: 3 to 4 IN. W.G.)	3.53
DOV POSITION (% OPEN) [RANGE: FULLY CLOSED]	100%
SALW-PI-6005* PRESSURE (RANGE: 2 to 4 psig)	3 psi

5.5.12 **VERY SLOWLY INCREASE** the test manometer pressure to 10 IN. W.G.



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5.5 Specific Gravity Transmitter Operation (Cont.)

5.5.13 **OBSERVE** the OCS and DTAM **AND RECORD** the specific gravity readings below:

OPERATOR CONTROL STATION SPECIFIC GRAVITY READING (RANGE: 9 to 11 inches)	DATA TABLE ACCESS MODULE SPECIFIC GRAVITY READING (RANGE: 9 to 11 inches)
10.0 in.	9.95 in.

5.5.14 **VERIFY** the Specific Gravity Low Alarm **CLEARs** at the OCS and at the DTAM.



5.5.15 **VERIFY** the DOV **MOVES OPEN**.



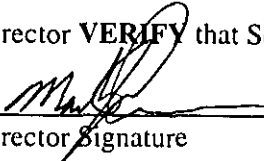
5.5.16 **SHUT OFF** the jet pump **USING** the DTAM.



5.5.17 **REMOVE** any jumpers or forces **NOT** required for the next section.

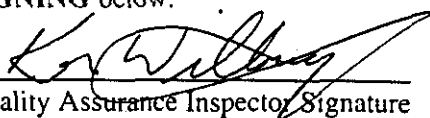


5.5.18 Test Director **VERIFY** that Section 5.5 is **COMPLETE** by **SIGNING** below:


Test Director Signature

11-12-00
Date

5.5.19 Quality Assurance Inspector **VERIFY** that Section 5.5 is **COMPLETE** by **SIGNING** below.


Quality Assurance Inspector Signature

11/12/00
Date

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5.6 Specific Gravity Setpoint Change

5.6.1 PLACE the saltwell jumper JR-1 valve in the PROCESS position.



5.6.2 ENSURE pump recirculation apparatus is **FILLED** with water **AND** **CONFIGURED** to CIRCULATE water through the saltwell Jet Pump.



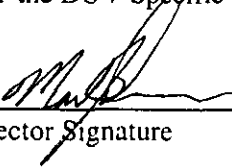
5.6.3 START the Jet Pump using the DTAM.



5.6.4 SET the DOV Specific Gravity setpoint to 8 inches at the OCS.



5.6.5 VERIFY the DOV Specific Gravity setpoint is 8 inches at the DTAM AND the OCS.

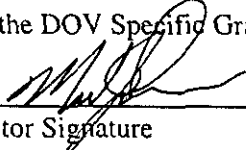

Test Director Signature

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5.6.6 SET the DOV Specific Gravity setpoint to 6 inches at the DTAM.



5.6.7 VERIFY the DOV Specific Gravity setpoint is 6 inches at the OCS.


Test Director Signature

11-12-00
Date

5.6.8 USING DTAM, STOP the Jet Pump.

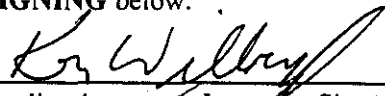


5.6.9 Test Director VERIFY that Section 5.6 is COMPLETE by SIGNING below.


Test Director Signature

11-12-00
Date

5.6.10 Quality Assurance Inspector VERIFY that Section 5.6 is COMPLETE by SIGNING below.


Quality Assurance Inspector Signature

11/12/00
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5.7 Diaphragm Operated Valve Automatic/Manual Operation

Note - This system is a Proportional Integral Derivative controller for controlling the liquid level in the saltwell screen. The Specific Gravity Transmitter reads unadjusted liquid level once the middle diptube leg is uncovered by declining liquid levels.

The system uses the signal from the Specific Gravity Transmitter as the Process Variable. The controller compares the process variable to the setpoint and adjusts the DOV position accordingly (manipulated variable).

The purpose of this test section is to verify the DOV trend is toward achieving the setpoint while different process variables are simulated.

DATA TABLE ACCESS MODULE (AUTOMATIC)

5.7.1 **ENSURE** the Saltwell Pump and Jumper Assembly, **AND** the PIC Skid are **CONFIGURED** for AUTOMATIC DOV level control by **PERFORMING** the following:

5.7.1.1 **SET** the test manometer on the Specific Gravity Transmitter to a pressure of 0 IN. W.G.

5.7.1.2 **ENSURE** the following valves are OPEN:

Valve Number	✓
SALW-V-6034*	✓
SALW-V-6026*	✓
SALW-V-6001*	✓
SALW-V-6004*	✓
SALW-V-6002*	✓

5.7.1.3 **PLACE** the saltwell jumper JR-1 valve in the PROCESS position.

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5.7 Diaphragm Operated Valve Automatic/Manual Operation (Cont.)

- 5.7.1.4 At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **OR** software forces have been **INSTALLED** on pump permissive interlocks for equipment **NOT** installed or out of service. ☒
- 5.7.1.5 **ENSURE** that only alarms "JET PUMP SHUTDOWN" (alarm 12) and "SGT LOW" (alarm 13) on the DTAM are **DISPLAYED**. ☒
- 5.7.1.6 **ENSURE** pump recirculation apparatus is **FILLED** with water **AND CONFIGURED** to **CIRCULATE** water through the saltwell Jet Pump. ☒
- 5.7.1.7 **START** the Jet Pump **USING** the DTAM. ☒
- 5.7.1.8 **SET** DOV Specific Gravity Controller to **AUTO** with setpoint of seven (7) inches **USING** the DTAM. ☒
- 5.7.1.9 **SET** the test manometer to a pressure of 14 IN. W.G. ☒
- 5.7.1.10 **VERIFY** the DOV **MOVES** to a more **OPEN** position. ☒
- 5.7.1.11 **SET** the test manometer to a pressure of 6 IN. W.G. ☒
- 5.7.1.12 **VERIFY** the DOV **MOVES** to a more **CLOSED** position. ☒

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5.7 Diaphragm Operated Valve Automatic/Manual Operation (Cont.)

DATA TABLE ACCESS MODULE (MANUAL)

5.7.2 **VERIFY** the MANUAL CONTROL of the DOV is OPERATIONAL by **PERFORMING** the following steps:

5.7.2.1 **IF** a test port is installed at SALW-PI-6005*, **ENSURE** a 0-30 psig manometer is attached to the test port. ☒

5.7.2.2 **SET** the test manometer on the Specific Gravity Transmitter to a pressure of 15 IN. W.G. (14 to 16 IN. W.G.). ☒

5.7.2.3 **SET** DOV Specific Gravity Controller to MANUAL CONTROL USING the DTAM. ☒

5.7.2.4 **SET** the DOV to 0% OPEN USING the manual control on the DTAM. ☒

Note - DOV position is read from a metal pointer mounted on the valve stem. Indication is approximate valve position only, and is NOT intended to be readable to a high degree of precision.

5.7.2.5 **RECORD** the following:

DOV POSITION (RANGE: 0 - 10% OPEN)	SALW-PI-6005* PRESSURE (RANGE: 2 to 4 psig)	SALW-PI-6005* MANOMETER (RANGE: 2 to 4 psig)
0%	4	2.99 psi

5.7.2.6 **SET** the DOV to 25% OPEN USING the manual control on the DTAM. ☒

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5.7 Diaphragm Operated Valve Automatic/Manual Operation (Cont.)

5.7.2.7 **RECORD** the following:

DOV POSITION (RANGE: 15% to 35% OPEN)	SALW-PI-6005* PRESSURE (RANGE: 5 to 7 psig)	SALW-PI-6005* MANOMETER (RANGE: 5 to 7 psig)
25%	7	5.9

5.7.2.8 **SET** the DOV to 75% OPEN USING the manual control on the DTAM.



5.7.2.9 **RECORD** the following:

DOV POSITION (RANGE: 65% to 85% OPEN)	SALW-PI-6005* PRESSURE (RANGE: 11 to 13 psig)	SALW-PI-6005* MANOMETER (RANGE: 11 to 13 psig)
80%	12.75	12.02

5.7.2.10 **SET** the DOV to 100% OPEN USING the manual control on the DTAM.



5.7.2.11 **RECORD** the following:

DOV POSITION (RANGE: 90% to 110% OPEN)	SALW-PI-6005* PRESSURE (RANGE: 14 to 16 psig)	SALW-PI-6005* MANOMETER (RANGE: 14 to 16 psig)
100%	15.75	15.04

5.7.2.12 **VERY SLOWLY DECREASE** the Specific Gravity Transmitter test manometer pressure while **OBSERVING** the DOV.



5.7.2.13 **VERIFY** the DOV remains FULLY OPEN while the test manometer is DECREASED UNTIL the "SGT LOW" (DTAM alarm 13) ANNUNCIATES.



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5.7 Diaphragm Operated Valve Automatic/Manual Operation (Cont.)

5.7.2.14 **VERIFY** the DOV IMMEDIATELY CLOSES WHEN the "SGT LOW" (DTAM alarm 13) ANNUNCIATES.



5.7.2.15 **SHUT DOWN** the Jet Pump with DTAM.



OPERATOR CONTROL STATION (AUTO)

5.7.3 **ENSURE** the Saltwell Pump and Jumper Assembly AND PIC Skid are **CONFIGURED** for AUTOMATIC DOV level control by **PERFORMING** the following:

5.7.3.1 **SET** the test manometer to a pressure of 0 IN. W.G.



5.7.3.2 **ENSURE** the following valves are OPEN:

Valve Number	
SALW-V-6034*	✓
SALW-V-6026*	✓
SALW-V-6001*	✓
SALW-V-6004*	✓
SALW-V-6002*	✓

5.7.3.3 **ENSURE** the saltwell jumper JR-1 valve is in the PROCESS position.



5.7.3.4 At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, OR software forces have been **INSTALLED** on pump permissive interlocks for equipment NOT installed or out of service.



5.7.3.5 **ENSURE** that only alarms "JET PUMP SHUTDOWN" (alarm 12) and "SGT LOW" (alarm 13) are **DISPLAYED** on the OCS.



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5.7 Diaphragm Operated Valve Automatic/Manual Operation (Cont.)

- 5.7.3.6 **ENSURE** pump recirculation apparatus is **FILLED** with water **AND CONFIGURED** to **CIRCULATE** water through the saltwell Jet Pump. ☒
- 5.7.3.7 **START** the Jet Pump **USING** the DTAM. ☒
- 5.7.3.8 **SET** the Specific Gravity Controller to **AUTO** with setpoint of 7 inches **USING** the OCS. ☒
- 5.7.3.9 **SET** the test manometer to a pressure of 14 IN. W.G. (13 to 15 IN. W.G.). ☒
- 5.7.3.10 **VERIFY** the DOV **MOVES** to a more **OPEN** position. ☒
- 5.7.3.11 **SET** the test manometer to a pressure of 6 IN. W.G. ☒
- 5.7.3.12 **VERIFY** the DOV **MOVES** to a more **CLOSED** position. ☒

OPERATOR CONTROL STATION (MANUAL)

- 5.7.4 **VERIFY** the **MANUAL CONTROL** of the DOV is **OPERATIONAL** by **PERFORMING** the following steps:
- 5.7.4.1 **IF** a test port is installed at SALW-PI-6005*, **ENSURE** a 0-30 psig manometer is attached to the test port. ☒
- 5.7.4.2 **SET** the test manometer on the Specific Gravity Transmitter to a pressure of 15 IN. W.G. (14 to 16 IN. W.G.). ☒
- 5.7.4.3 **SET** the DOV Specific Gravity Controller to **MANUAL CONTROL** **USING** the OCS. ☒
- 5.7.4.4 **SET** the DOV to 0% **OPEN** **USING** the manual control on the OCS. ☒

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5.7 Diaphragm Operated Valve Automatic/Manual Operation (Cont.)

5.7.4.5 RECORD the following:

DOV POSITION (RANGE: 0-10% OPEN)	SALW-PI-6005* PRESSURE (RANGE: 2 to 4 psig)	SALW-PI-6005* MANOMETER (RANGE: 2 to 4 psig)
0%	4.8	2.9

5.7.4.6 SET the DOV to 30% OPEN USING the manual control on the OCS.



5.7.4.7 RECORD the following:

DOV POSITION (RANGE: 20% to 40% OPEN)	SALW-PI-6005* PRESSURE (RANGE: 5.6 to 7.6 psig)	SALW-PI-6005* MANOMETER (RANGE: 5.6 to 7.6 psig)
30%	7.5	6.5

5.7.4.8 SET the DOV to 70% OPEN USING the manual control on the OCS.



5.7.4.9 RECORD the following:

DOV POSITION (RANGE: 60% to 80% OPEN)	SALW-PI-6005* PRESSURE (RANGE: 10.4 to 12.4 psig)	SALW-PI-6005* MANOMETER (RANGE: 10.4 to 12.4 psig)
80%	12.0	11.4

5.7.4.10 SET the DOV to 100% OPEN USING the manual control on the OCS.



5.7.4.11 RECORD the following:

DOV POSITION (RANGE: 90% to 110% OPEN)	SALW-PI-6005* PRESSURE (RANGE: 14 to 16 psig)	SALW-PI-6005* MANOMETER (RANGE: 14 to 16 psig)
100%	15.5	15.0

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5.7 Diaphragm Operated Valve Automatic/Manual Operation (Cont.)

5.7.4.12 **VERY SLOWLY DECREASE** the Specific Gravity Transmitter test manometer pressure while **OBSERVING** the DOV.



5.7.4.13 **VERIFY** the DOV remains **FULLY OPEN** while the test manometer is **DECREASED UNTIL** the OCS SGT LOW alarm **ANNUNCIATES**.



5.7.4.14 **VERIFY** the DOV **IMMEDIATELY CLOSSES WHEN** the OCS SGT LOW alarm **ANNUNCIATES**.



5.7.4.15 **SHUT DOWN** the Jet Pump with the OCS.



5.7.5 **IF** installed, **REMOVE** the manometer from the SALW-PI-6005* test port.



5.7.6 **REMOVE** any jumpers or forces **NOT** required for the next section.



5.7.7 Test Director **VERIFY** that Section 5.7 is **COMPLETE** by **SIGNING** below.


Test Director Signature

11-12-00
Date

5.7.8 Quality Assurance Inspector **VERIFY** that Section 5.7 is **COMPLETE** by **SIGNING** below.


Quality Assurance Inspector Signature

11/12/00
Date

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5.8 Jet Pump Flowmeter Operation

5.8.1 **ENSURE** the Saltwell Jumper Flow Element is **COMMUNICATING** **PROPERLY** with the FQIT SALW-FQIT-6001* and DTAM by **PERFORMING** the following:

5.8.1.1 **PLACE** the saltwell jumper JR-1 valve in the **PROCESS** position.



5.8.1.2 **ENSURE** Pump recirculation apparatus is **FILLED** with water **AND** **CONFIGURED** to **CIRCULATE** water through the saltwell Jet Pump.



5.8.1.3 **ENSURE** the 0 - 50 IN. W.G. test manometer is still **ATTACHED** to the high pressure dip tube **AND** set to 15 IN. W.G. (14 to 16 IN. W.G.).



5.8.1.4 **ENSURE** a rotameter has been **INSTALLED** in series with the jumper flow element.



5.8.1.5 **ENSURE** the DTAM and OCS are **CONFIGURED** for **MANUAL** **CONTROL**.



5.8.1.6 At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **OR** software forces have been **INSTALLED** on pump permissive interlocks for equipment **NOT** installed or out of service.



5.8.1.7 **SET** the DOV to 0% **OPEN** **USING** the manual control on the DTAM.



5.8.1.8 **START** the Jet Pump **USING** the DTAM.



5.8.1.9 **ADJUST** valve JR-2 as **DIRECTED** by the Test Director to achieve the required flow rates in the following steps.

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5.8 Jet Pump Flowmeter Operation (Cont.)

5.8.2 **RECORD** initial readings, and the time readings were taken.

DATA TABLE ACCESS MODULE TOTALIZER (Gallons)	FQIT TOTALIZER GALLONS	TIME
8968	444	10:30am

5.8.3 **ADJUST** the DOV Controller to **OBTAIN** a flowrate of approximately 1.0 gpm (0.95 to 1.05 gpm) through the jumper, as **INDICATED** on the FQIT.



5.8.4 **RECORD** the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (gpm)	(INSTR) FQIT FLOWRATE (gpm)	DTAM FLOWRATE (gpm)	OCS FLOWRATE (gpm)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
67	67	75	1.2	1.16	1.13	1.14	8971	448

5.8.5 **VERIFY** that Test Rotameter flowrate, FQIT SALW-FQIT-6001* flowrate, DTAM flowrate, AND OCS flowrate are within ± 0.1 gpm.



5.8.6 **SUBTRACT INITIAL** totalizer reading for DTAM from the current totalizer reading for DTAM.

RECORD result: 3 gallons

5.8.7 **SUBTRACT INITIAL** totalizer reading for FQIT from the current totalizer reading for FQIT.

RECORD result: 4 gallons

5.8.8 **VERIFY** results from the above two steps are within ± 5.0 gallons.



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5.8 Jet Pump Flowmeter Operation (Cont.)

5.8.9 **ADJUST** the DOV Controller to **OBTAIN** a flowrate of approximately 2.0 gpm (1.9 to 2.1 gpm) through the jumper, as **INDICATED** on the FQIT.



5.8.10 **RECORD** the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (gpm)	(INSTR) FQIT FLOWRATE (gpm)	DTAM FLOWRATE (gpm)	OCS FLOWRATE (gpm)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
82%	82%	82%	2.0	1.99	1.98	1.98	8973	450

5.8.11 **VERIFY** that Test Rotameter flowrate, FQIT SALW-FQIT-6001* flowrate, DTAM flowrate, **AND** OCS flowrate are within ± 0.2 gpm.



5.8.12 **SUBTRACT INITIAL** totalizer reading for DTAM from the current totalizer reading for DTAM.

RECORD result: 5 gallons

5.8.13 **SUBTRACT INITIAL** totalizer reading for FQIT from the current totalizer reading for FQIT.

RECORD result: 6 gallons

5.8.14 **VERIFY** results from the above two steps are within ± 5.0 gallons.



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5.8 Jet Pump Flowmeter Operation (Cont.)

- 5.8.15 **ADJUST** the DOV Controller to **OBTAIN** a flowrate of approximately 3.0 gpm (2.85 to 3.15 gpm) through the jumper, as **INDICATED** on the FQIT.



- 5.8.16 **RECORD** the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (gpm)	(INSTR) FQIT FLOWRATE (gpm)	DTAM FLOWRATE (gpm)	OCS FLOWRATE (gpm)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
97%	97%	100%	3.0	3.05	3.05	3.06	8978	455

- 5.8.17 **VERIFY** that Test Rotameter flowrate, FQIT SALW-FQIT-6001* flowrate, DTAM flowrate, **AND** OCS flowrate are within ± 0.3 gpm.



- 5.8.18 **SUBTRACT INITIAL** totalizer reading for DTAM from the current totalizer reading for DTAM.

RECORD result: 10 gallons

- 5.8.19 **SUBTRACT INITIAL** totalizer reading for FQIT from the current totalizer reading for FQIT.

RECORD result: 11 gallons

- 5.8.20 **VERIFY** results from the above two steps are within ± 5.0 gallons.



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5.8 Jet Pump Flowmeter Operation (Cont.)

Note - Steps 5.8.21 through 5.8.26 only performed if flowmeter is configured for flowrate of 7.0 gpm or greater.

5.8.21 **ADJUST** the DOV Controller to **OBTAIN** a flowrate of approximately 7.0 gpm (6.65 to 7.35 gpm) through the jumper, as **INDICATED** on the FQIT.



5.8.22 **RECORD** the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (gpm)	(INSTR) FQIT FLOWRATE (gpm)	DTAM FLOWRATE (gpm)	OCS FLOWRATE (gpm)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
100%	100%	100%	6.5	6.73	6.71	6.71	8996	474

5.8.23 **VERIFY** that Test Rotameter flowrate, FQIT SALW-FQIT-6001* flowrate, DTAM flowrate, AND OCS flowrate are within ± 0.7 gpm.



5.8.24 **SUBTRACT INITIAL** totalizer reading for DTAM from the current totalizer reading for DTAM.

RECORD result: 28 gallons

5.8.25 **SUBTRACT INITIAL** totalizer reading for FQIT from the current totalizer reading for FQIT.

RECORD result: 30 gallons

5.8.26 **VERIFY** results from the above two steps are within ± 5.0 gallons.



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5.8 Jet Pump Flowmeter Operation (Cont.)

Note - Steps 5.8.27 through 5.8.32 only performed if flowmeter is configured for flowrate of 10.0 gpm or greater.

5.8.27 **ADJUST** the DOV Controller to **OBTAIN** a flowrate of approximately 10.0 gpm (9.5 to 10.5 gpm) through the jumper, as **INDICATED** on the FQIT.

NA

5.8.28 **RECORD** the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (gpm)	(INSTR) FQIT FLOWRATE (gpm)	DTAM FLOWRATE (gpm)	OCS FLOWRATE (gpm)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
NA								→

5.8.29 **VERIFY** that Test Rotameter flowrate, FQIT SALW-FQIT-6001* flowrate, DTAM flowrate, AND OCS flowrate are within ± 1.0 gpm

NA

5.8.30 **SUBTRACT INITIAL** totalizer reading for DTAM from the current totalizer reading for DTAM.

RECORD result: NA gallons

5.8.31 **SUBTRACT INITIAL** totalizer reading for FQIT from the current totalizer reading for FQIT.

RECORD result: NA gallons

5.8.32 **VERIFY** results from the above two steps are within ± 5.0 gallons.

NA

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5.8 Jet Pump Flowmeter Operation (Cont.)

Note - Steps 5.8.33 through 5.8.38 only performed if flowmeter is configured for flowrate greater than 14.0 gpm.

5.8.33 **ADJUST** the DOV Controller to **OBTAIN** a flowrate of approximately 14.0 gpm (13.3 to 14.7 gpm) through the jumper, as **INDICATED** on the FQIT

OR

OPEN valve JR-2 and the DOV (to 100%) to **OBTAIN** the maximum flowrate.

NA

5.8.34 **RECORD** the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (gpm)	(INSTR) FQIT FLOWRATE (gpm)	DTAM FLOWRATE (gpm)	OCS FLOWRATE (gpm)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
NA								

5.8.35 **VERIFY** that Test Rotameter flowrate, FQIT SALW-FQIT-6001* flowrate, DTAM flowrate, AND OCS flowrate are within ± 1.4 gpm

NA

5.8.36 **SUBTRACT INITIAL** totalizer reading for DTAM from the current totalizer reading for DTAM.

RECORD result: NA gallons

5.8.37 **SUBTRACT INITIAL** totalizer reading for FQIT from the current totalizer reading for FQIT.

RECORD result: NA gallons

5.8.38 **VERIFY** results from the above two steps are within ± 5.0 gallons.

NA

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5.8 Jet Pump Flowmeter Operation (Cont.)

5.8.39 CLOSE the DOV (to 0%) USING the manual control.



5.8.40 ENSURE valve JR-2 is CLOSED.



5.8.41 RECORD the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (gpm)	(INSTR) FQIT FLOWRATE (gpm)	DTAM FLOWRATE (gpm)	OCS FLOWRATE (gpm)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
0%	0%	0%	0	0	0	0	9005	483

5.8.42 VERIFY that Test Rotameter flowrate, FQIT SALW-FQIT-6001* flowrate, DTAM flowrate, AND OCS flowrate all indicate 0.0 gpm (0.0 to 0.1 gpm).



5.8.43 SUBTRACT INITIAL totalizer reading for DTAM from the current totalizer reading for DTAM.

RECORD result: 37 gallons

5.8.44 SUBTRACT INITIAL totalizer reading for FQIT from the current totalizer reading for FQIT.

RECORD result: 39 gallons

5.8.45 VERIFY results from the above two steps are within ± 5.0 gallons.



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5.8 Jet Pump Flowmeter Operation (Cont.)

5.8.46 **OPEN** the DOV (to 100%) using manual control.



5.8.47 **RECORD** the following:

TEST ROTAMETER FLOWRATE (gpm)	DTAM FLOWRATE (gpm)
3.2	3.2

5.8.48 **USING** the DTAM, **STOP** the Jet Pump.



5.8.49 **REMOVE** the test manometer.



5.8.50 **ISOLATE** the Specific Gravity Transmitter from the system.

5.8.50.1 **OPEN** the Specific Gravity Transmitter EQUALIZING valve located on SALW-V-6035*.



5.8.50.2 **CLOSE** the LOW side and HIGH side isolation valves located on SALW-V-6035*



5.8.50.3 **CLOSE** valve SALW-V-6005*.



5.8.50.4 **CLOSE** valve SALW-V-6007*.



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5.8 Jet Pump Flowmeter Operation (Cont.)

5.8.51 REMOVE any jumpers or forces NOT required for the next section.



5.8.52 Test Director **VERIFY** that Section 5.8 is **COMPLETE** by **SIGNING** below.



Test Director Signature

11-13-00
Date

5.8.53 Quality Assurance Inspector **VERIFY** that Section 5.8 is **COMPLETE** by **SIGNING** below.



Quality Assurance Inspector Signature

11/13/00
Date

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5.9 Combustible Gas Monitor Operation

Note - This test section only performed if a CGM is installed.

5.9.1 ENSURE SALW-FCV-6001* is CLOSED.

WA

5.9.2 OPEN the calibration gas bottle isolation valve and SALW-V-6055*.

WA

5.9.3 CRACK OPEN SALW-FCV-6001* to initiate test gas flow and OBSERVE percent LFL reading on DTAM.

WA

Note - Alarm 25, "CGM HIGH LFL" should annunciate at 20% LFL.

5.9.4 Continue to SLOWLY OPEN SALW-FCV-6001* UNTIL alarm 25, "CGM HIGH LFL" ANNUNCIATES at the DTAM and OCS.

WA

5.9.5 RECORD the percent LFL DISPLAYED at the DTAM at the point of alarm.

DATA TABLE ACCESS MODULE
% Lower Flammability Limit

WA

5.9.6 ACKNOWLEDGE alarms at the OCS and DTAM.

WA

5.9.7 CLOSE SALW-FCV-6001*.

WA

5.9.8 WAIT UNTIL the gas surrounding the sensor DISSIPATES and the gas concentration reading RETURNS to normal.

WA

5.9.9 ACKNOWLEDGE alarm at SALW-CGT-6001* by PLACING a magnet to the base of the transmitter at the point indicated UNTIL the "RSET" message is DISPLAYED.

WA

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5.9 Combustible Gas Monitor Operation (Cont.)

5.9.10 **PLACE** the JR-1 valve in the PROCESS position.

NA

5.9.11 **ENSURE** Pump recirculation apparatus is filled with water **AND** configured to circulate water through the saltwell Jet Pump jumper.

NA

5.9.12 At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **OR** software forces have been installed on pump permissive interlocks for equipment not installed or out of service.

NA

5.9.13 **USING** the DTAM, **START** the Jet Pump.

NA

5.9.14 **VERIFY** Jet Pump operation at the OCS.

NA

5.9.15 **SIMULTANEOUSLY OPEN** SALW-FCV-6001* to provide test gas flow of one liter per minute **AND START** a stopwatch.

NA

5.9.16 **STOP** the stopwatch **WHEN** the Combustible Gas Transmitter **INDICATES** 27% LFL.

NA

5.9.17 **RECORD** the elapsed time.

SALW-CGT-6001* Elapsed Time
NA

5.9.18 **VERIFY** the elapsed time is **LESS** than ninety (90) seconds.

NA

5.9.19 **VERIFY** the Jet Pump **SHUT DOWN** at the DTAM and OCS.

NA

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5.9 Combustible Gas Monitor Operation (Cont.)

5.9.20¹ **ACKNOWLEDGE** alarm at the DTAM and OCS.

NA

Note - Test gas concentration is 30% LFL.

5.9.21 **WAIT UNTIL** DTAM reaches a stable maximum value for percent LFL.

NA

5.9.22 **RECORD** the percent LFL displayed at the DTAM and at the OCS.

OPERATOR CONTROL STATION Maximum % Lower Flammability Limit	DATA TABLE ACCESS MODULE Maximum % Lower Flammability Limit
NA	NA

5.9.23 **CLOSE** the calibration gas bottle isolation valve.

NA

5.9.24 **OPEN** SALW-V-6048* and SALW-V-6054* to purge the test gas from the lines.

NA

5.9.25 **WAIT UNTIL** the gas surrounding the sensor **DISSIPATES** and the gas concentration reading **RETURNS** to normal.

NA

5.9.26 **CLOSE** SALW-FCV-6001*, SALW-V-6054*, and SALW-V-6055*.

NA

5.9.27 **VERIFY** the Jet Pump can not be started using the DTAM because alarm 25, "CGM HIGH LFL" is **LATCHED**.

NA

5.9.28 **ACKNOWLEDGE** alarm at SALW-CGT-6001*.

NA

5.9.29 **VERIFY** that alarm 25, "CGM HIGH LFL" **CLEAR**s at the OCS and at the DTAM.

NA

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5.9 Combustible Gas Monitor Operation (Cont.)

- 5.9.30 USING the DTAM, START the Jet Pump. WA
- 5.9.31 REMOVE Combustible Gas Transmitter SALW-CGT-6001* housing. WA
- 5.9.32 UNPLUG the black keyed plug inside transmitter to SIMULATE a loss of sensor. WA
- 5.9.33 VERIFY the Jet Pump IMMEDIATELY SHUTS DOWN at the DTAM and OCS. WA
- 5.9.34 VERIFY that alarm 31, "CGM TROUBLE" ANNUNCIATES at the DTAM. WA
- 5.9.35 ACKNOWLEDGE alarm at the DTAM and OCS. WA
- 5.9.36 VERIFY the Jet Pump CAN NOT be started using the DTAM because of alarm 31, "CGM TROUBLE." WA
- 5.9.37 REPLACE the keyed plug and the transmitter housing. WA
- 5.9.38 VERIFY that alarm 31, "CGM TROUBLE" CLEARS at the DTAM. WA
- 5.9.39 REMOVE any jumpers or forces NOT required for the next section. WA

REF. HNF-SP-WM-TSR-
006 R/ 1-12
SECTION 5.11.2
PAR. B.3

- 5.9.40 Test Director VERIFY that Section 5.9 is COMPLETE by SIGNING below.

WA

Test Director Signature Date

- 5.9.41 Quality Assurance Inspector VERIFY that Section 5.9 is COMPLETE by SIGNING below.

WA KW 11/13/00

Quality Assurance Inspector Signature Date

[Handwritten Signature]
11/13/00

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5.10 Jet Pump Valving Interlock

- 5.10.1 PLACE the saltwell jumper JR-1 valve in the PROCESS position. ☒
- 5.10.2 ENSURE Pump recirculation apparatus is **FILLED** with water **AND CONFIGURED** to CIRCULATE water through the saltwell Jet Pump. ☒
- 5.10.3 At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **OR** software forces have been **INSTALLED** on pump permissive interlocks for equipment NOT installed or out of service. ☒
- 5.10.4 USING the DTAM, **START** the Jet Pump. ☒
- 5.10.5 **VERIFY** Jet Pump OPERATION at the OCS. ☒
- 5.10.6 PLACE the JR-1 Valve, on the Jet Pump jumper, in the FLUSH position. ☒
- Note - Alarm 3, "FLUSH PRESSURE HI" may be received.
- 5.10.7 **VERIFY** the following:
- Jet Pump IMMEDIATELY SHUTS DOWN
 - Alarm 5, "JR-1 POSITION NOT PROCESS" is DISPLAYED at DTAM AND "FLUSH" at OCS
 - Alarm 12, "JET PUMP SHUTDOWN" is DISPLAYED at DTAM and "SHUTDOWN" at OCS. ☒
- 5.10.8 **VERIFY** the Jet Pump CAN NOT be RE-STARTED with the JR-1 valve in the FLUSH position. ☒
- 5.10.9 **ENSURE** all alarms have been **ACKNOWLEDGED** at the DTAM and OCS. ☒

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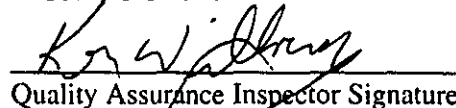
5.10 Jet Pump Valving Interlock (Cont.)

- 5.10.10 PLACE the JR-1 valve in the PROCESS position. ☒
- 5.10.11 RESTART the Jet Pump USING the DTAM. ☒
- 5.10.12 VERIFY Jet Pump OPERATION at the OCS. ☒
- 5.10.13 PLACE the JR-1 valve in the PRIME position. ☒
- Note - Alarm 3, "FLUSH PRESSURE HI" may be received.
- 5.10.14 VERIFY the following:
- Jet Pump IMMEDIATELY SHUTS DOWN
 - Alarm 5, "JR-1 POSITION NOT PROCESS" is DISPLAYED at DTAM AND "PRIME" at OCS
 - Alarm 12, "JET PUMP SHUTDOWN" is DISPLAYED at DTAM AND "SHUTDOWN" at OCS. ☒
- 5.10.15 VERIFY the Jet Pump CAN NOT be RE-STARTED with the JR-1 valve in the PRIME position. ☒
- 5.10.16 ENSURE all alarms have been ACKNOWLEDGED at the DTAM and OCS. ☒
- 5.10.17 REMOVE any jumpers or forces NOT required for the next section. ☒
- 5.10.18 Test Director VERIFY that Section 5.10 is COMPLETE by SIGNING below.


Test Director Signature

11-18-00
Date

- 5.10.19 Quality Assurance Inspector VERIFY that Section 5.10 is COMPLETE by SIGNING below.


Quality Assurance Inspector Signature

11/18/00
Date

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5.11 Operator Control Station Jet Pump Shutdown Test

- 5.11.1 PLACE the Jet Pump JR-1 valve in the PROCESS position. ☒
- 5.11.2 ENSURE Pump recirculation apparatus is **FILLED** with water **AND CONFIGURED** to CIRCULATE water through the saltwell Jet Pump. ☒
- 5.11.3 At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **OR** software forces have been **INSTALLED** on pump permissive interlocks for equipment NOT installed or out of service. ☒
- 5.11.4 USING the DTAM, **START** the Jet Pump. ☒
- 5.11.5 **VERIFY** Jet Pump OPERATION at the OCS. ☒
- 5.11.6 USING the OCS, **SHUT DOWN** the Jet Pump. ☒
- 5.11.7 **VERIFY** the SHUTDOWN alarm at the OCS. ☒
- 5.11.8 **ACKNOWLEDGE** alarms at DTAM and OCS. ☒
- 5.11.9 **REMOVE** any jumpers or forces NOT required for the next section. ☒
- 5.11.10 Test Director **VERIFY** that Section 5.11 is **COMPLETE** by **SIGNING** below.


Test Director Signature

11-18-00
Date

- 5.11.11 Quality Assurance Inspector **VERIFY** that Section 5.11 is **COMPLETE** by **SIGNING** below.


Quality Assurance Inspector Signature

11/18/00
Date

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5.12 Leak Detection and Interlock Check

- Note - Leak Detector Interlock checks can be performed in any sequence.
- OCS wording of alarms may be different than DTAM, but must have the same general meaning.
 - Pump operation will be simulated during this test section.

5.12.1 Cognizant Engineer shall **LIST** all relevant leak detectors in pump pit, valve pits, clean out boxes, and encasements along transfer route in the table below. Any unused lines in the table shall be marked with an "N/A".

5.12.2 **VERIFY AND RECORD** functional check and next due date on the Table below.

LEAK DETECTOR	FUNCTIONAL CHECK DATE	NEXT DUE DATE
1) S-102 PUMP PIT	11/18/00	2/18/01
2) S-109 PUMP PIT	11/18/00	2/18/01
3) SX-101 PUMP PIT	11/18/00	2/18/01
4) SX-103 PUMP PIT	11/18/00	2/18/01
5) SX-105 PUMP PIT	11/18/00	2/18/01
6) SX-A VALVE PIT	11/18/00	2/18/01
7) S-C VALVE PIT	11/18/00	2/18/01
8) S-A VALVE PIT	11/18/00	2/18/01
9) SY-A VALVE PIT	11/18/00	2/18/01
10) SY-02A PUMP PIT	11/18/00	2/18/01
11)		
12)		
13)		
14)		
15)		

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5.12 Leak Detection and Interlock Check (Cont.)

Note - For EMERGENCY PUMPING SKID, or testing of skid prior to field installation, Test Director shall "NA" the work package number line and sign and date where requested.

5.12.3 **REQUEST** Test Director to **VERIFY** that field installation of the Saltwell equipment per applicable work package is **COMPLETED** for testing.

Enter work package number WS-00-396

John Hawley
Test Director Signature

11-18-00
Date

5.12.4 **IF** test is to be performed after pump installation, **ENSURE** Jet Pump motor leads have been **DE-TERMINATED** from the load side of the starter while performing this section.



Note - Programmer may need to force limit switches and pressure switches to simulate recirculate flow.

5.12.5 At the discretion of the Test Director, **ENSURE** temporary interlock jumpers, **OR** software forces have been **INSTALLED** on pump permissive interlocks for equipment **NOT** installed or out of service.



5.12.6 **MONITOR** the status of the Pump Starter to **VERIFY** pump status.



Note - 242-A Evaporator Operator only needs to be notified for East Area transfers.

5.12.7 **IF** required, **NOTIFY** the TMACS Operator, 242-A Evaporator Operator and Shift Manager that this section is about to **COMMENCE**.



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5.12 Leak Detection and Interlock Check (Cont.)

5.12.8 **CHECK** the leak detector interlocks corresponding to the leak detectors entered in the previous Table by **PERFORMING** the following steps **AND** **CHECKING** the appropriate space **WHEN COMPLETE**:

LEAK DETECTOR	CHECK COMPLETE (✓)
1) S-102 PUMP PIT	✓
2) S-109 PUMP PIT	✓
3) SX-101 PUMP PIT	✓
4) SX-103 PUMP PIT	✓
5) SX-105 PUMP PIT	✓
6) SX-A VALVE PIT	✓
7) S-C VALVE PIT	✓
8) S-A VALVE PIT	✓
9) SY-A VALVE PIT	✓
10) SY-02A PUMP PIT	✓
11)	
12)	
13)	
14)	
15)	

5.12.8.1 **IF REQUIRED, ENSURE** the PIC Skid is **CONFIGURED** and ready to receive leak detector signal.



5.12.8.2 **USING** DTAM, **START** the Jet Pump.



5.12.8.3 **VERIFY** Jet Pump **START** at OCS.



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5.12 Leak Detection and Interlock Check (Cont.)

WARNING

Energized circuits and leads are contained inside the cabinet. Observe appropriate electrical precautions. Comply with RPP-PRO-088, **ELECTRICAL WORK SAFETY** to avoid personnel electrical shock hazards.

5.12.8.4 **TEST** leak detector **USING** Leak Detector Test Circuit, jumper, or by immersing probe, as required.



5.12.8.5 **VERIFY** and **ACKNOWLEDGE** the following:

- **IMMEDIATE** Jet Pump **SHUTDOWN**
- Alarm 12, "JET PUMP SHUTDOWN" is **ANNUNCIATING** at the DTAM and "SHUTDOWN" at the OCS
- A Leak Detection Alarm is **ANNUNCIATING** at the DTAM **AND** at the OCS.



5.12.8.6 **VERIFY** the Jet Pump **CAN NOT** be **RE-STARTED** at the DTAM **WHEN** the alarm is **ACTIVE**.



5.12.8.7 **RETURN** the leak detector to **OPERATION** by **PERFORMING** the following:

- A. **IF** a jumper was **INSTALLED** in Step 5.12.8.4, **REMOVE** jumper.
- B. **VERIFY** the Leak Detection Alarm **RESETS** at the DTAM and OCS.
- C. **RESET** the remote Master Pump Shutdown, if required.



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5.12 Leak Detection and Interlock Check (Cont.)

5.12.9 IF Master Pump Shutdown EXISTS, **PERFORM** the following steps.

5.12.9.1 **RESTART** the Jet Pump **USING** DTAM.



5.12.9.2 **SHUTDOWN** the Jet Pump **USING** the manual Master Pump Shutdown.



5.12.9.3 **VERIFY IMMEDIATE** Jet Pump **SHUTDOWN AND** the Leak Detection Alarm is **ANNUNCIATING**.



5.12.9.4 **ACKNOWLEDGE** alarms at the DTAM and OCS.



5.12.9.5 **RESET** the Master Pump Shutdown.



5.12.9.6 **RESTART** the Jet Pump **USING** DTAM.



5.12.9.7 **SHUTDOWN** the Jet Pump **USING** the manual Master Pump Shutdown at a second location (if it exists).



5.12.9.8 **VERIFY IMMEDIATE** Jet Pump **SHUTDOWN AND** the Leak Detection Alarm is **ANNUNCIATING**.



5.12.9.9 **ACKNOWLEDGE** alarms at the DTAM and OCS.



5.12.9.10 **RESET** the Master Pump Shutdown.



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5.12 Leak Detection and Interlock Check (Cont.)

INTERLOCK TEST

Note - It is the intent of this section to test all transfer system and FGM/CGM interlocks not previously tested in the leak detector section. Included would be Double Contained Receiver Tank (DCRT) high level alarms, dilution tank low level alarms, FGM/CGM alarms, leak detection not previously tested, and encasement and receiver tank pressurization alarms.

- The Cognizant Engineer is responsible for reviewing the installation design and identifying all appropriate interlocks to be tested.

5.12.10- Cognizant Engineer shall ENTER all interlocks (by relay or device designation) not tested by a separate section in the Table below.

RELAY/DEVICE DESIGNATION	JET PUMP SHUTDOWN (✓)	ALARM MESSAGE RECEIVED
1) Communication failure S/D S-102, S-109, SX-101, SX-103, SX-105	✓	DTAM PLC COM. FAILURE
		OCS DATA HIGHWAY FAILURE
2) High flush pressure @ S-102 S/D SX-101	✓	DTAM FLUSH PRES. HIGH
		OCS S-102 FLUSH PRES. HIGH
3) High flush pressure @ S-109 S/D SX-101	✓	DTAM FLUSH PRES. HIGH
		OCS S-109 FLUSH PRES. HIGH
4) High flush pressure @ SX-103 S/D SX-101	✓	DTAM FLUSH PRES HIGH
		OCS SX-103 FLUSH PRES HIGH
5) High flush pressure @ SX-105 S/D SX-101	✓	DTAM FLUSH PRES. HIGH
		OCS SX-105 FLUSH PRES HIGH
6) High flush pressure @ SX-101 S/D S-102, S-109, SX-103, SX-105	✓	DTAM FLUSH PRES HIGH
		OCS FLUSH PRES HIGH
7) Recirc flush pressure signal loss @ S-109 S/D SX-101	✓	DTAM RECIRC FLUSH SIG loss
		OCS RECIRC FLUSH SIG loss

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5.12 Leak Detection and Interlock Check (Cont.)

INTERLOCK TEST

Note - It is the intent of this section to test all transfer system and FGM/CGM interlocks not previously tested in the leak detector section. Included would be Double Contained Receiver Tank (DCRT) high level alarms, dilution tank low level alarms, FGM/CGM alarms, leak detection not previously tested, and encasement and receiver tank pressurization alarms.

- The Cognizant Engineer is responsible for reviewing the installation design and identifying all appropriate interlocks to be tested.

5.12.10 Cognizant Engineer shall ENTER all interlocks (by relay or device designation) not tested by a separate section in the Table below.

RELAY/DEVICE DESIGNATION	JET PUMP SHUTDOWN (✓)	ALARM MESSAGE RECEIVED
1) Recirc flush pressure signal loss @ SX-103 S/D SX-101	✓	DTAM RECIRC FLUSH SIG LOSS
		OCS RECIRC FLUSH SIG LOSS
2) Recirc flush pressure signal loss @ SX-105 S/D SX-101	✓	DTAM RECIRC FLUSH SIG LOSS
		OCS RECIRC FLUSH SIG LOSS
3) Recirc flush pressure signal loss @ SX-101 S/D S-102, S-109, SX-103, SX-105	✓	DTAM RFPT SIG LOSS
		OCS SIGNAL LOSS @ SX-101
4) Jumper flush pressure signal loss @ S-109 S/D SX-101	✓	DTAM S FARM JUMP. FLUSH SIG LOSS
		OCS FLUSH SIG LOSS
5) Jumper flush pressure signal loss @ SX-103 S/D SX-101	✓	DTAM S FARM JUMP. FLUSH SIG LOSS
		OCS FLUSH SIG LOSS
6) Jumper flush pressure signal loss @ SX-105 S/D SX-101	✓	DTAM S FARM JUMP. FLUSH SIG. LOSS
		OCS FLUSH SIG LOSS
7) Jumper flush pressure signal loss @ SX-101 S/D S-102, S-109, SX-103, SX-105	✓	DTAM JFPT SIG LOSS
		OCS SX FARM SIG LOSS

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5.12 Leak Detection and Interlock Check (Cont.)

INTERLOCK TEST

Note - It is the intent of this section to test all transfer system and FGM/CGM interlocks not previously tested in the leak detector section. Included would be Double Contained Receiver Tank (DCRT) high level alarms, dilution tank low level alarms, FGM/CGM alarms, leak detection not previously tested, and encasement and receiver tank pressurization alarms.

- The Cognizant Engineer is responsible for reviewing the installation design and identifying all appropriate interlocks to be tested.

5.12.10 Cognizant Engineer shall **ENTER** all interlocks (by relay or device designation) not tested by a separate section in the Table below.

RELAY/DEVICE DESIGNATION	JET PUMP SHUTDOWN (✓)	ALARM MESSAGE RECEIVED
1) High recirc pressure @ S-102 S/D SX-101	✓	DTAM S FARM HIGH RECIRC PRESS
		OCS S-102 SX-101 RECIRC PRESS HIGH
2) High recirc pressure @ S-109 S/D SX-101	✓	DTAM S FARM HIGH RECIRC PRESS
		OCS S-109 SX-101 RECIRC PRESS HIGH
3) High recirc pressure @ SX-103 S/D SX-101	✓	DTAM SX FARM HIGH RECIRC PRESS
		OCS SX-103 SX-101 RECIRC PRESS HIGH
4) High recirc pressure @ SX-105 S/D SX-101	✓	DTAM SX FARM HIGH RECIRC PRESS
		OCS SX-105 SX-101 RECIRC PRESS HIGH
5) High recirc pressure @ SX-101 S/D S-102, S-109, SX-103, SX-105	✓	DTAM RECIRC PRESS. HIGH
		OCS RECIRC PRESS HIGH
6) S-102 JR-1 not in prime S/D SX-101 after T/D	✓	DTAM S-TANK S/D TIMER ACT.
		OCS SX-101 S/D TIMER
7) S-109 JR-1 not in prime S/D SX-101 after T/D	✓	DTAM S-TANK S/D TIMER ACT
		OCS SX-101 S/D TIMER

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5.12 Leak Detection and Interlock Check (Cont.)

INTERLOCK TEST

Note - It is the intent of this section to test all transfer system and FGM/CGM interlocks not previously tested in the leak detector section. Included would be Double Contained Receiver Tank (DCRT) high level alarms, dilution tank low level alarms, FGM/CGM alarms, leak detection not previously tested, and encasement and receiver tank pressurization alarms.

- The Cognizant Engineer is responsible for reviewing the installation design and identifying all appropriate interlocks to be tested.

5.12.10 Cognizant Engineer shall ENTER all interlocks (by relay or device designation) not tested by a separate section in the Table below.

RELAY/DEVICE DESIGNATION	JET PUMP SHUTDOWN (✓)	ALARM MESSAGE RECEIVED
1) SX-103 JR-1 not in prime S/D SX-101 after T/D	✓	DTAM S TANK S/D TIMER ACT
		OCS SX-101 S/D TIMER
2) SX-105 JR-1 not in prime S/D SX-101 after T/D	✓	DTAM S TANK S/D TIMER ACT
		OCS SX-101 S/D TIMER
3) SX-101 JR-1 not in prime S/D S-102, S-109, SX-103, SX-105	✓	DTAM _____
		OCS TIMER ACT. S/D
4) S-102 JR-1 in flush S/D SX-101	✓	DTAM S TANK IN FLUSH
		OCS "
5) S-109 JR-1 in flush S/D SX-101	✓	DTAM S TANK IN FLUSH
		OCS "
6) SX-103 JR-1 in flush S/D SX-101	✓	DTAM SX TANK IN FLUSH
		OCS "
7) SX-105 JR-1 in flush S/D SX-101	✓	DTAM SX TANK IN FLUSH
		OCS "

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5.12 Leak Detection and Interlock Check (Cont.)

INTERLOCK TEST

Note - It is the intent of this section to test all transfer system and FGM/CGM interlocks not previously tested in the leak detector section. Included would be Double Contained Receiver Tank (DCRT) high level alarms, dilution tank low level alarms, FGM/CGM alarms, leak detection not previously tested, and encasement and receiver tank pressurization alarms.

- The Cognizant Engineer is responsible for reviewing the installation design and identifying all appropriate interlocks to be tested.

5.12.10 Cognizant Engineer shall **ENTER** all interlocks (by relay or device designation) not tested by a separate section in the Table below.

RELAY/DEVICE DESIGNATION	JET PUMP SHUTDOWN (✓)	ALARM MESSAGE RECEIVED
1) SX-101 JR-1 in flush S/D S-102, S-109, SX-103, SX-105	✓	DTAM _____
		OCS SX IN FLUSH SX 101 IN FLUSH
2) Low dilution flow TWT 11-12-00	✓	DTAM ALARM 36 "DILUTION TANK WATER NO FLOW" 11/11/00
		OCS DILUTION TANK LOW WATER FLOW
3)		DTAM
		OCS
4)		DTAM
		OCS
5)		DTAM
		OCS
6)		DTAM
		OCS
7)		DTAM
		OCS

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5.12 Leak Detection and Interlock Check (Cont.)

5.12.11 NOTIFY TMACS Operator, 242-A Evaporator Operator (if transfer is in east Area), and Shift Manager that this section is about to begin.



5.12.12 For each relay LISTED in the Table above, **PERFORM** the following:

5.12.12.1 USING the DTAM, **START** the Jet Pump, AND **OBSERVE** the pump run light is ON.



WARNING

Energized circuits and leads are contained inside the cabinet. Observe appropriate electrical precautions. Comply with RPP-PRO-088, ELECTRICAL WORK SAFETY to avoid personnel electrical shock hazards.

Note - Craft will determine a safe method of deactivating each device. Test pushbuttons, mock input signals, shorting across secondary of induction relay coils, lifting coil leads, or pulling device from socket may be used.

5.12.12.2 **DE-ACTIVATE** the relay to **SIMULATE** an alarm condition.



5.12.12.3 **VERIFY** DTAM and OCS DISPLAY alarm 12, "JET PUMP SHUTDOWN" AND an interlock message.



5.12.12.4 **RECORD** a check mark in the Table if Jet Pump shutdown occurs.

5.12.12.5 **RECORD** the interlock alarm messages received at DTAM and OCS in the Table.

5.12.12.6 **ACKNOWLEDGE** the alarms at DTAM and OCS.



5.12.12.7 **VERIFY** the Jet Pump CAN NOT be RE-STARTED at the DTAM WHEN the alarm is ACTIVE.



5.12.12.8 **RESTORE** the circuit (remove simulated alarm condition).



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5.12 Leak Detection and Interlock Check (Cont.)

- 5.12.13 NOTIFY TMACS Operator, 242-A Evaporator Operator (if transfer is in east Area), and Shift Manager that this section is COMPLETE.



- 5.12.14 REMOVE any jumpers or forces NOT required for the next section.



- 5.12.15 Test Director VERIFY that Section 5.12 is COMPLETE by SIGNING below.

John Hanley
Test Director Signature

11-18-00
Date

- 5.12.16 Quality Assurance Inspector VERIFY that Section 5.12 is COMPLETE by SIGNING below.

Kevin W. Chapp
Quality Assurance Inspector Signature

11/18/00
Date

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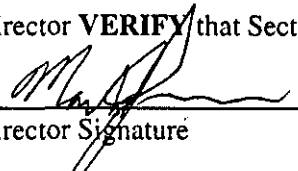
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5.13 Software Documentation

- 5.13.1 REQUEST Engineering to **PRINT** out a Ladder Logic and Alarm Table for the PIC Skid **AND ATTACH** to this procedure.

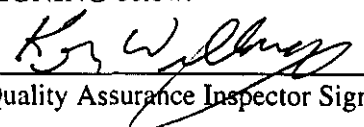


- 5.13.2 Test Director **VERIFY** that Section 5.13 is **COMPLETE** by **SIGNING** below.


Test Director Signature

11-20-00
Date

- 5.13.3 Quality Assurance Inspector **VERIFY** that Section 5.13 is **COMPLETE** by **SIGNING** below.


Quality Assurance Inspector Signature

11/20/00
Date

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5.14 Drip Control Box Water Drip System

Note - This test section only performed with a Drip Control Box.

- If dip tubes are not installed in test area, process air and drip water will be expelled from the Drip Control Box.

5.14.1 If necessary, **ATTACH** temporary portable hose from dip tube outlet to high and medium dip tubes from the Drip Control Box.

- **ROUTE** the flexible hose to a suitable drain **AND SECURE**. NA

5.14.2 **ACTUATE** the Dip Tube Drip System by **SLOWLY OPENING** the following valves:

VALVES	OPEN (✓)
SALW-V-6018* located in the bottom right of SALW-PNL-6002* (WFIE Cabinet)	NA
SALW-V-6016* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	NA
SALW-V-6056* located in SALW-PNL-6002* (WFIE Cabinet)	NA
SALW-V-6160* (as applicable) located in the Drip Control Box	NA
SALW-V-6162* located in the Drip Control Box	NA
SALW-V-6164* located in the Drip Control Box	NA

CAUTION

Relief valve (SALW-PRV-6001*) will actuate and relieve pressure at 25 psig.

5.14.3 **CAREFULLY ADJUST** Pressure Regulator SALW-PCV-6005*, located in the bottom of SALW-PNL-6002* (WFIE Cabinet) to 20 psig (18 to 22 psig) as **INDICATED** by SALW-PI-6001* located in the middle of SALW-PNL-6002* (WFIE Cabinet). NA

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5.14 Drip Control Box Water Drip System (Cont.)

5.14.4 , ADJUST valve SALW-V-6161* to allow APPROXIMATELY 2 drops/second as INDICATED by sight glass SALW-FG-6101* (1 to 3 drops/second).

NA

5.14.5 ADJUST valve SALW-V-6163* to allow APPROXIMATELY 2 drops/second as INDICATED by sight glass SALW-FG-6102* (1 to 3 drops/second).

NA

Note - Instrument air to the Diaphragm Operated Valve will remain valved in for testing in subsequent steps.

5.14.6 VALVE OUT the dip tube drip water by SLOWLY CLOSING the following:

VALVE	CLOSED (✓)
SALW-V-6161*	NA
SALW-V-6162*	NA
SALW-V-6163*	NA
SALW-V-6164*	NA

5.14.7 Test Director VERIFY that Section 5.14 is COMPLETE by SIGNING below.

Test Director Signature Date

5.14.8 Quality Assurance Inspector VERIFY that Section 5.14 is COMPLETE by SIGNING below.

Quality Assurance Inspector Signature Date

Kw 11/19/00

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Procedure Performer Signature Sheet

All Operators and Shift Managers performing this Procedure who will be initialing and signing this procedure shall enter their printed name, signature and initials below.

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Operational Test Procedure Exception Log

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Operational Test Procedure Exception Record

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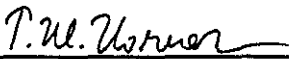
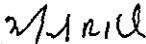
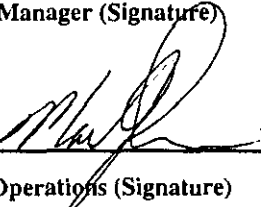
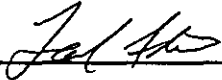
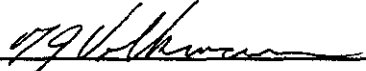
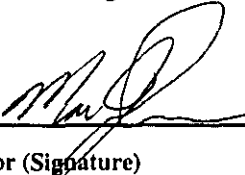
OTP step number:	OTP Exception Log Number
Description of Exception:	
Resolution of Exception:	
Date of Resolution:	
Test Director signature:	
Cognizant Engineer signature:	
Quality Assurance signature:	
Tank Farm Operations signature:	

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Operational Test Procedure Acceptance Record

This Operational Test Procedure has been completed and the results, including red-line changes, exceptions, and exception resolutions, have been reviewed for compliance with the intent of the Purpose (Section 1.0). The test results are accepted by the undersigned:

	T M HORNER	11-21-00
Cognizant Engineer (Signature)	(Print Name)	Date
	M. R. Koch	11-21-00
Engineering Manager (Signature)	(Print Name)	Date
	Mark Johnson	11-20-00
Tank Farm Operations (Signature)	(Print Name)	Date
	L A Flowers	11-21-00
Safety (Signature)	(Print Name)	Date
	T J VOLKMAN	11/21/00
Quality Assurance (Signature)	(Print Name)	Date
	Mark Johnson	11-20-00
Test Director (Signature)	(Print Name)	Date

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